URBAN COMPACTNESS:

A STUDY OF ANKARA URBAN FORM

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ABSTRACT

URBAN COMPACTNESS:
A Study of Ankara Urban Form

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Sustainable urban development is mentioned to
gether with the concept of urban form in contemporary planning literature. The main reason behind this is a need for determining an ideal physical development scheme and its main principles of urban future in a broad term. Besides, the operational side of urban planning requires a concrete set of design codes in order to transform urban space in both macro and mezzo scale. At this point, the concept of *urban compactness* and the idea of *Compact City* have come into the agenda of planning.

In the last decade, the model of compact city has become a prototype of sustainable urban form in developed countries. It is also argued whether compact urbanity is a nostalgic metaphor or an engineering solution. It has emerged as a reaction to the negative consequences of urban sprawl and suburbanization as the anti-urbanist urban phenomena in Western geographies. Hence, the relevance of urban compactness should be examined for developing and underdeveloped countries and their settlement structures.

The basic motivation of the thesis is to examine the relevance and validity of urban compactness in the case of Turkey as a developing Eurasian country. For this end, the evolution of urban compactness as a fact and an idea in the historical context of developed countries and it's meaning for the developing world; Ankara is examined as a case study by re-reading its planning history and the transformation of its urban form from the point of view of compactness.

Key Words: Urban Form, Urban Compactness, Sustainable Urban Development, Compact City, Centrism/Decentrism, Urbanism/Disurbanism, Urban Form of Ankara

ÖZ

KENTSEL DERİŞİKLİK:

Ankara Kent Formu Çalışması

ÇALIŞKAN, Olgu
Yüksek Lisans, Şehir ve Bölge Planlama Bölümü, Kentsel Tasarım
Tez Yöneticisi: Doç. Dr. Baykan GÜNAY
Ortak Tez Yöneticisi: Yrd. Doç. Dr. Adnan BARLAS

Temmuz 2004, 231 sayfa

Sürdürülebilir kentsel gelişim, günümüz planlama yazınında, sürdürülebilir kent formu kavramı ile birlikte anılmaya başlanmıştır. Bunun temel nedeni, kentsel gelecek için ideal bir fiziksel gelişim şemasını geniş bir çerçevede tanımlama gereksinimidir. Bununla birlikte, kentsel planlamanın operasyonel yanı, ideal tiplemelerin ötesinde somut tasarım kodlamasına gerek duymaktadır. Bu noktada *kentsel derişiklik*[*] kavramı ve Derişik Kent düşüncesi gündeme gelmektedir.

Yaklaşık son on yıldır, derişik kent modeli ve onun türevleri sürdürülebilir kent formu ilkörnekleri olarak birçok gelişmiş ülkede olumlanarak sunulmaktadırlar. Bunların nostaljik bir metafor mu -özellikle Avrupa kentinin tarihselliğine gönderme yapan- yoksa birer kent mühendisliği çözümü olarak mı sunulduğu tartışma götüren bir konu halini gelmiştir. Derişik kentler düşünesi batı şehirciliğinde karşı karşı-kentselci bir süreç olan kentsel yayınım ve altkentleşmeye bir tepki olarak ortaya çıkarken; gelişmekte olan ülke kentleri için geçerliliği sorgu konusudur.

[*] Türkçe yazında 'kompaktlık' kavramı genel olarak 'yoğunluk' terimi ile açıklanmaktadır. Ancak, yoğunluk kompaktlığın bileşenlerinden yalnızca biridir ve tek başına yeterli bir açıklama düzeyine sahip değildir. Bu nedenle, kavramın 'sık', 'bütüncül', 'yekpare' ve 'bağdaşık' kavramları ile desteklenmesi gerektiği düşüncesiyle sözlük anlamı "mütemerkiz, mütekasif, konsantre, seyreltik karşıtı" olan Türkçe kökenli 'derişiklik' terimi kompaktlık terimi yerine tercih edilmiştir. Sözcüğün kökeni 'derişmek' olup "bir nokta dolayında toplanmak, temerküz etmek" anlamındadır. Bkz. Dil Derneği, 1998 Türkçe Sözlük-1, Ankara, sf. 325

Bu çalışmanın temel güdülenmesi, kentsel derişikliğin gelişmekte olan bir Avrasya ülkesi olan Türkiye özelindeki geçerliliğini ve gerekliliğini sorgulamaktır. Bir gerçeklik ve düşünce olarak kentsel derişikliğin gelişmiş ülkeler bağlamında evrimi ve gelişmekte olan ülkeler için anlamı tanımlandıktan sonra, Ankara kenti görgül çalışmada ele alınmaktadır. Bu çerçevede, Ankara planlama deneyimi ve kent biçiminin dönüşümü, tarihsel süreç içinde ve derişiklik özelinde tartışılmaktadır.

Anahtar sözcükler: Kent Formu, Kentsel Derişiklik, Sürdürülebilir Kentsel Gelişim, Derişik Kent, Merkezcillik/Dışsaltçıllık, Kentselcilik / Karşı-kentselcilik, Ankara Kent Formu

dedicated to Prof. Dr. Bademli…

and in memoriam of Prof. Dr. Kışlalı, Dr. Hablemitoğlu and the others…

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CHAPTER 1

INTRODUCTION

1.1 Aim of The Study

The main purpose of this study is to investigate the rationality and the currency of 'urban compactness' as a fact and to discuss the relevance of prevailing discussions on 'compact city' by considering different contexts in space and time. The study shall consider the issue within a historical point of view.

Although physically occupying only two percent of the Earth's surface, the form of cities, as much as their functions are still among the main problematic of modern societies, because urban settlements are becoming prominent consumers of world resources and producers of a vast amount of waste with their growing bodies.

From early urbanization, human settlements tent are shaped by basic defensive concerns; they have protective city-walls and gates. Apart from extensive uses like graveyards that were out of the settled area, those settlements were characterized by *compact* forms. The industrial era introduced a new compactness pattern at socio-economical dynamics of 'modern times'. Great expansion of industry and as an outcome of transportation systems over large geographies compelled cities to devastate their spatial and spatio-economic borders. Since then, modern urbanization has been identified by the term of uncontrollable urban expansion and growth. Such an expansive urban development process brought about some problems such as excessive energy-resource consumption, environmental degradation, and inconsistencies with urban way of life and decaying effects in urban centers. For the survival of the cities, planners, policy makers, designers and urban intellectuals found themselves in search for a way to reverse the negative effects of current urbanization trend, which is called *unsustainable*.

When we re-read urban history with a simplified outlook, we can reach a substantial conceptualization that all of the prominent changes in mode of production, economic re-structuring and social constructions were represented in urban space by two basic forms: *deconcentration/dispersion* or *concentration/compaction*. If we take the development of human perception of space acting like a pendulum, it can be claimed that progressist alternatives on urban space are fed by previous idealizations in the past. In this framework, the reason why the *compact city* came to the agenda as a 'new' formulation is rooted from the past. After this stage, it is important to evaluate whether the new

advocating of the compactness of urban form is a nostalgia or whether it is a product of operational, problem solving state of mind.

Today, it has become a cliché that it is vital to deal with urban agenda by drawing a schema of 'sustainable city'. However, there is no clear consensus on the definition on the term. For this reason, any conceptualization on sustainable urban development remains vague while the operational essence of urban planning and design requires more concrete principles for action. In such a circumstance, key formulations on sustainability gain much more importance, since they must provide solid-based solutions to actualize the sustainability ideal.

Actual position of the debates on urban form in the literature of sustainable city can be evaluated within this context. The success of promoting sustainable way of life and social inclusion depend not only on the management, policy or financial instruments but also on the design-led solutions to enhance physical environment of cities. It is known that linking people and places together by well-integrated -rather than fragmented and loose- urban space structure is a key instrument for the consistency of urban communities in the frame of social sustainability.

By its nature, the contemporary argumentation on urban form includes both claims on formal idealizations and also their rationality, relevance and vitality considerations on real basis. This kind of an outlook makes the research on urban form improve sustainability strategies effectively and overcome the absence of specific targets. Within this concern, the study clarifies the transforming vitality and relevance conditions of urban compactness, as a component of sustainable urban form.

On the other hand, when we look into the contemporary theories on urban form, we perceive the domination of such a functionalistic perspective. Driving force behind urban form discussions are efficiency, equity or other performance criteria within different themes. Thus, urban form debates in the literature generally do not give references to the problematic of 'form', adequately today. Yet, this turns into a handicap for the operational performance of the studies, mentioned above. Because of this, the exclusive explanations on the functional issues about urban settlements do not spatially address the source of the problems. To get rid of this handicap, putting 'formal' themes into circuit would be beneficial. This handicap in the previous studies has triggered this research to focus mainly on 'urban compactness' in the context of 'urban form'.

To achieve such an objective, it is essential to design a terminology, explaining compactness degree in urban context. In New Webster Dictionary, 'compact' means *"densely packed, closely arranged or put together so as to use space economically"* In another definition it is*, "smaller than average so as to be cheap to run"* (New Webster Dictionary, 1992: 199). In both definitions, the concept of compactness directly refers to be economical. It is important that, the first definition deliberately emphasizes a spatial feature. As well as referring to an artifact or thing, the word compact also refers

to a relational state of being: *"an agreement between individuals or groups"*. In all definitions, the situation of being compact employs a condition of proximity and closeness of '*differences'*.

Although the conceptualization of 'urban compactness' is led by these descriptions of compactness at a degree, it should be differentiated with respect to the characteristic of urban space. In such a (re)conceptualization, compactness gains a number of new substances. As it's seen in Table-1.1, redefinition of urban compactness is constructed on a controversial relationship between compact and counter-compact formation of urban space, regarding its formal, structural and functional dimensions.

Table 1.1: Key concepts to evaluate the compactness of urban form.

Compact Urban Formation		***Counter-Compact Urban Formation***
Centralized		*Decentralized*
Intensive		*Extensive*
Dense		*Sparse*
Concentrated		*Deconcentrated*
Continuous		*Fragmented*
Bounded	Vs.	*Expansive/ Elusive*
Packed		*Scattered/ Dispersed*
Compressed		*Diffused*
Confined		*Unlimited*
Close-knit		*Thin*
Diversified		*Homogeneous/Uniform*
Integrated		*Segregated*
Coherent		*Fuzzy/ Vague*

As examining the problematic of urban compactness, a substantial differentiation is put forward: *City structure* and *urban form.* Here, 'city structure' is regarded as a concept, which basically gives reference to the adjustment of the elementary constituents of urban system, such as the pattern of the transportation network of a city, metaphorically 'skeleton' of the urban body. On the other hand, by using the term of urban form, we consign to the attribute of the 'body', much more. At this point, consideration of density, grain or border comes foreground, which are directly related with the notion of urban compactness. However, when assessing urban compaction in the study, not only urban form but also the concept of city structure is examined as a second aspect. The concept of city structure is made use of supporting compactness discussions secondarily, in the study.

While, defining urban compactness in technical terms, we do not aim to restrain the study within an urban engineering outlook. Rather, the study aims to provide an ideological outlook to reader, in order to understand the normative intentions behind the models of urban form, which are suggested by separate approaches. By doing this, the ideological continuity between those in the past and those today is aimed to be clarified to identify the contemporary ones, adequately. Such a state of mind makes the study free from a technisist point of view.

In spite of the fact that the conceptualizations on compact city are dominantly Western-oriented, the studies from developing countries seem to have become dominant in last years. Currently, an international perspective on sustainable urban form is in the process of construction. The 'compact city' currently tents to be perceived as today's visionary solution, adopted by academics and politicians in most countries. -Although related reflections of the debate have not been embodied in Turkish planning literature, even today-. Compact city is likely to be seen as an antidote to a series of urban problems, which are a result of rapid urban growth. Yet, it has been widely recognized that compact city approaches should be reinterpreted within the countries' own urban peculiarities and specific developmental differences of the developing and developed world. While *developed north* passed rapid urban growth in mid-Twentieth century and entered a new phase, characterized by high level of urbanization and low urban growth, *developing south* is in the middle stage of its urban transition with rapid rates of urbanization and low level of urbanization. Therefore, 'developing compactness' is not a strategic aim itself, rather a problematic to be managed there. Within this framework, after explaining the currency of urban compactness in a broad context, with respect to the principles of sustainable urban development, the study aims to illuminate the relevance of urban compactness in different contexts of urbanizations. Such a differentiation is constructed in the study by a worldview, which conceptualizes the World as 'center' and 'periphery'. By this viewpoint, the relevance of urban compactness and the arguments produced for compact city is re-examined not only for the cases in developed world, but also for those in developing countries.

In such a perspective, we aimed to draw a comprehensive frame on the issue of urban compactness by referring a related urban phenomenon of both developed and developing countries. By attempting this, the study takes Ankara as a model of Turkish case for positioning the fact and idea of urban compactness Being the capital city of a Eurasian country and reflecting the characteristics of all Europe, Middle East and Mediterranean, Ankara is assumed to provide an original case, with respect to its transformation process of urban form and its end-state with reference to urban compactness. Within the final stage of the study, it is prominently aimed to provide a holistic framework on the urban form of Ankara, to assess the real trend, experienced by a certain planning approach today

1.2 Method of The Study

The major principle of designing the methodology of the study is to achieve an integration of the separate subtitles about the issue of urban compactness within a theoretical framework, allowing cross-examinations and relational-continuities in overall (See: Figure 1.2).

In order to obtain an introductory outlook, first, a brief explanation is given on the historical transformation of the compactness feature of urban form, from antiquity to present. Here, the "Five Long Waves", which is an explanatory framework on the historical modes of production by the

economists, Freeman et al., is benefited from adapting to the issue of city form. After depicting the story of urban form, the futurist views on urban compactness are summarized in Chapter 2.

Within the third chapter of the study, ideological framework of urban compactness is determined by classifying the major schools of planning and design. In this categorization, while some approaches are identified with a specific personality, some of them are branded by the groups belonging to a particular worldview. Here, the main categorical theme is *centrism/decentrism.* By using the term, 'centrism', the intention is to suggest a space imagination that is based on compactness characteristics –at least the major ones-. In this sense, regarding the common definitions of 'urbanity', centrist views are classified as 'urbanist' point of view. Contrarily, 'decentrist' approaches are regarded as 'disurbanist' positioning by their nature of ideological standpoint.

Eventually, to overcome the possible confusions on the definition of the term, contemporary definition of urban compactness is given in Chapter 4. To clarify the differences between the compactness of a 'thing' and 'urban entity/being' in meaning, the Transect of Duany is employed by adapting the index of urban compactness. Finally, six components/indicators of urban compactness, which are centrality, contiguity-spatial coherence-, density, diversity, intensity and fine-grain are determined and the reason how they give a compact characteristic to the space is discussed. The chapter on structural formation of a compact urban form is ended by a discussion on the spatial features of urban compactness. Here the main questions to be answered are "What is the spatial characteristic of a compact urbanity?" and "Are all high-density urban patterns categorically compact?"

Giving an objective outlook on the history and real character of urban compactness, then the currency of urban form within contemporary conditions of urbanization is taken into consideration in the next chapter. A deductionist method is preferred, here, by coming from the problematic of sustainable urban development and reaching to the issue of sustainable urban form, as one of the components. In the framework of sustainable urban form, urban expansion as current problem of urban agenda, today and the related problematic of energy use are examined in order to establish the vitality conditions of urban compactness, within a wider scene.

In Chapter 6, the reason why urban compactness is addressed in sustainability literature is evaluated. Putting forth the main considerations of sustainability agenda and then relating them with the problematic of urban compactness conduct this consideration. By sounding the related themes with compact urban form as a sustainable model, preservation of countryside, infrastructure/service provision, social sustainability ecology, domestic energy use, rationality behind contemporary perception of urban compactness is concluded. This chapter basically aims to determine the major motive behind compactness arguments for sustainability.

In the forthcoming chapter, those arguments are sorted out as the contemporary models for compact urban form. These approaches are examined by their differentiation criteria: settlement pattern,

transport paradigm and policies. This section of the study is ended by the critiques towards those arguments for urban compactness. Here, the critiques are viewed within four manners: methodological, ideological, political and technical.

The continuing chapter of the study, 'Policies of Urban Compactness' aims to hold operational basis of urban compactness in the planning agenda, overall. The policies, referred, are exemplified by the cases of different cities from Western countries, which accept compact city policy as a principle doctrine of urban planning and design.

Thereby, a holistic framework on the phenomenon of urban compactness in the context of developed countries is constituted by previous sections of the study. Then, it is aimed to seek the original rationality, relevance and vitality conditions of urban compactness in the developing urban world. In this context, by referring to Southeast Asian, North African and South American cities, which are already compact/dense by their nature or by a planned processes, a general outlook is attempted to be created in order to position the compactness issue for Turkish cities.

To realize such a research objective, the city of Ankara is taken as the case study area of the thesis. The major reason for choosing of the urban formation of Ankara resulted from the availability of database on its planning history and empirical findings on its functional performance regarding sustainability criteria of an urban form. The performance criteria of urban compactness come from previous theoretical framework of urban compactness within the study, which are mobility pattern, travel time/distances, automobile dependency and the level of gasoline consumption. Before evaluating the degree of urban compactness of Ankara, the process, which shapes today's city structure and urban form, is discussed. The basic drive here is to find out the real conditions, which were directed by five master planning experiences of Ankara and lighting the ideological preferences behind them. And then, the transformation pattern of macro urban form of Ankara is examined in the second part of the chapter.

Unless argumentations are supported by empirical analysis they are in danger of remaining in the realm of abstractness of theory on an unpractical base. Studies on urban form always hold this difficulty. If the set of criteria and/or indicators on urban form are not tested on an empirical base, the claims cannot turn into the principles for related strategies in the next step. For that reason, we prefer to testify the degree of urban compactness of Ankara, by comparing with the average measures of World cities. Thus, both positioning Ankara in the international compactness index and assessing the developing preferences by plans would be attainable, as the final stage of the study.

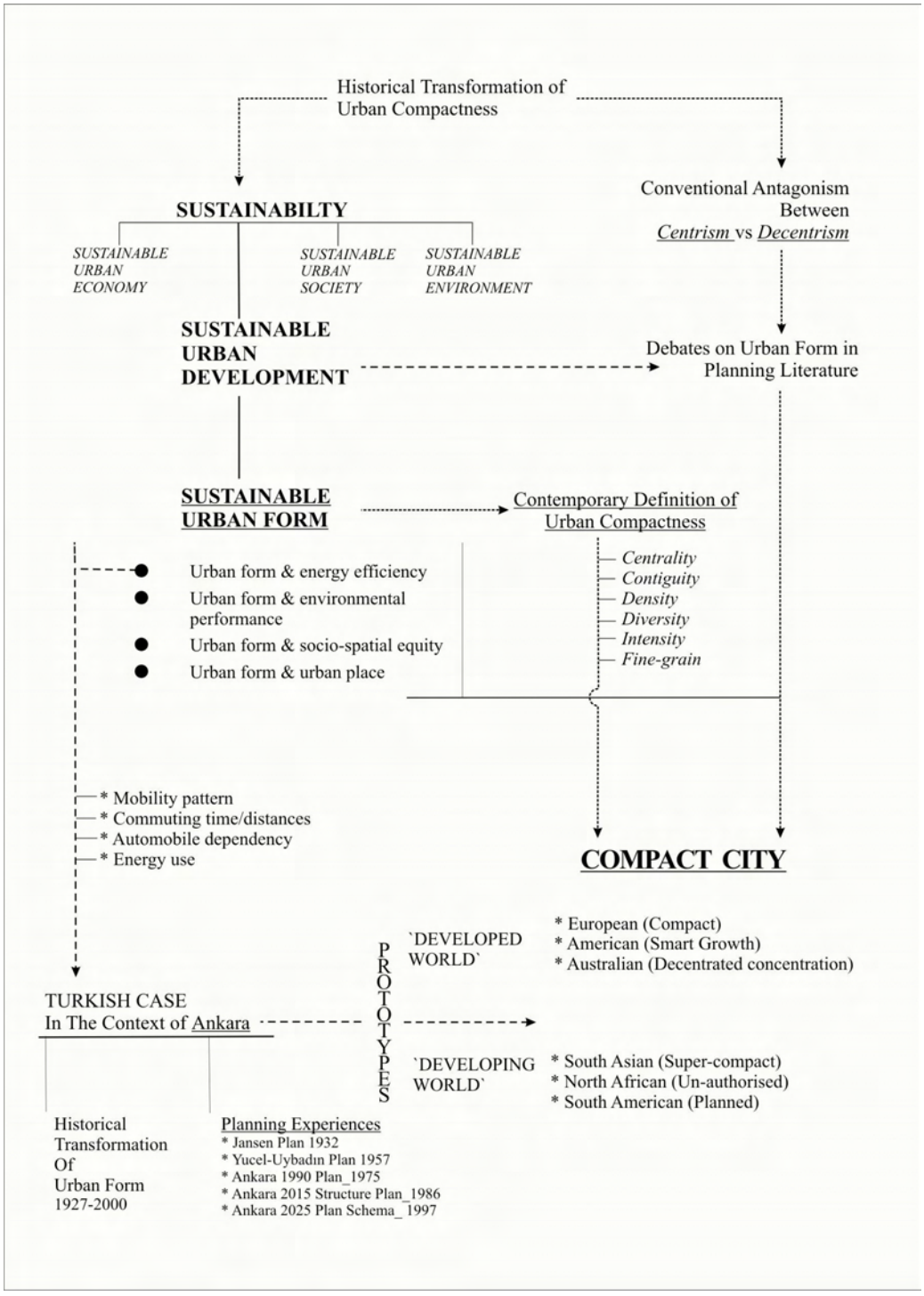


Figure 1.2. Relational framework of the study.

CHAPTER 2

DEFINITION & COMPONENTS OF URBAN COMPACTNESS

In the introductory chapter of the study, contemporary definition of urban compactness is given. Six components/indicators of urban compactness, -centrality, contiguity, density, diversity, intensity and fine-grain- are determined and examined. The chapter is ended by a discussion on the spatial features of urban compactness.

Any absence of the set of indicators, as an objective framework, generally makes debates on urban form incontextual. Hence, without giving an answer to the question of "What is compactness?", descriptive and/or comparative analyses would become polemical. The most outstanding problem about the debates derives from such a deficiency.

2.1 Definition

What futures define compact settlement form is the vital point of the compactness debate. An objective evaluation of urban structure with reference to its the sustainability capability and the level of compactness requires a set of criteria. To Burton, better measures of urban compactness are essential for three reasons:

1. to assist research on the impacts of compactness, and thus to guide policy,
2. to enable measurement of progress towards sustainability,
3. for use as planning tools (Burton, 2002: 230).

By means of the defining of urban compactness, not only evaluative comparisons between settlements can be available, but also components of design guidelines can be constructed. It should be noted that, those criteria evolve through the changing perception of urban space with its currently transforming pattern and mode of production.

Employing different categorizations, Newton takes *compact city* as one of the five archetypal urban forms:

a. *Dispersed city*- scattered low-density suburban development of population and employment based on road transportation.

b. *Compact city*- high population and employment density of an inner group of suburbs with connected public transport.

c. *Edge city*- Linked high-density population, employment and housing nodes with orbital freeways.
d. Corridor city- Growth along linear corridors radiating from central city, with public transport infrastructure.
e. *Fringe city*- continuous growth predominantly on the periphery of the city. (Newton, 2000: 46)

Apart from the definition of compact urban form at macro-form level, evaluation of compact urban form by emphasizing internal structure of urban fabric has gained dominancy in compact city literature For Bannister et al., overall urban compactness is recognized in two-dimensional base and it directly influences inner (spatial) characteristic of urban space. From this point of view, compactness is identified as *maximum length to with ratio* (Banister, et al., 1997:129).

Assertion of a compactness characteristic to an urban space differs from that of any ordinary physical object, not based on formal but in functional context. Hence, different from any inorganic physical existence, city has a dynamic essence, which makes it to be considered in *process*. Mainly this is the basic characteristic that makes urban settlements resemble of an organism. Within this framework, three basic criteria can be designated as the indicators of urban compactness:

- High-density,
- Mixed land-use,
- High-level of intensification (Burton, 2002).

Different from Burton's conceptualization of compactness in urban context, Cervero and Kockelman identify compactness by classifying it into three categories at neighborhood level:

- Density,
- Diversity,
- Design (Cervero et al., 1997).

Two different approaches on compactness measurement indicate that urban compactness covers a transitional context in between individual urban settlements and urban districts. In Owen's diagram on structural variables of urban settlements, problematic of urban compactness can be positioned in the range of spatial scales by examining the set of variables (see: Table 2.1).

Table 2.1 Position of urban compactness and its relationship with significant structural variables at different spatial scales. (Adapted from: Owens, 1986: 5)

	Structural variable	Scale
URBAN COMPACTNESS	• Settlement pattern (size, spacing of settlements etc.)	regional
	• Communication network between settlements	subregional
	• Size of settlement (area)	
	• Shape of settlement (circular, linear etc.)	
	• Communication network within settlement (radial, grid etc.)	Individual settlement
	• Density	
	• Interspersion of land uses	
	• Degree of centralization	
	• Layout (estates etc.)	neighborhood
	• Orientation (of buildings or groups of buildings)	
	• Sitting (in relation to microclimate)	building
	• Design	

In order to figure out urban compactness in a broad view, the schema produced by Urban Task Force would be beneficial as serving a holistic framework. In this schema, it is possible to define a compact urban area by comparing it with a dispersed settlement pattern as its anti-thesis.

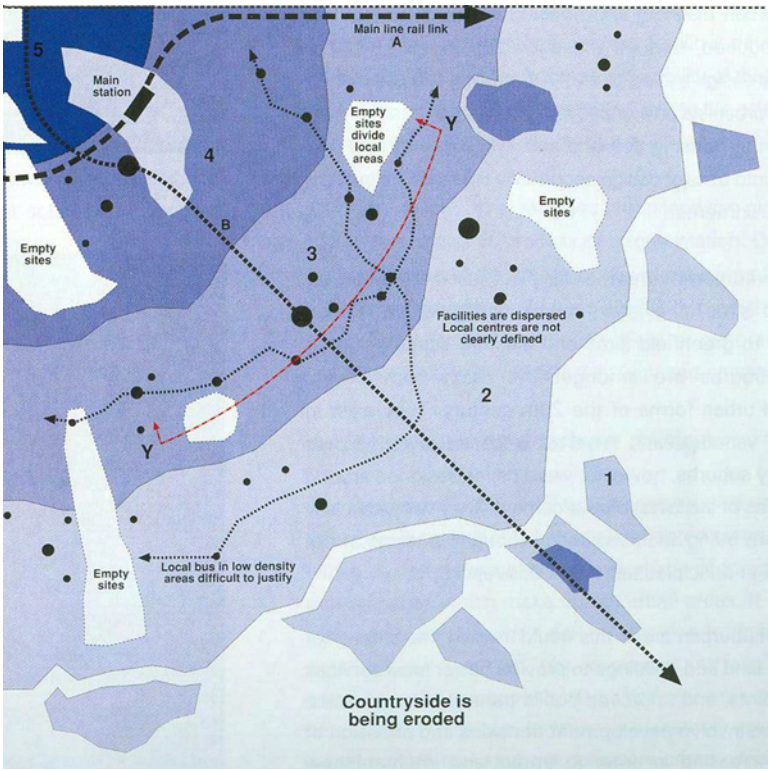


Figure 2.1: Schemata of dispersed urban settlement pattern.
(Source: Urban Task Force, 1999: 52)

In a dispersed urban area, scattered form of 'nodality' is the dominant factor. Local centers are not well defined and integrated with each other. Facilities are not coordinated with dispersion. Vacant lands divide urban fabric in a random pattern and an uncoordinated solid-void relationship between settled and unsettled areas. It causes a leapfrog -patchwork-type- development pattern. The relationship between urban area and countryside is not clear. It is subject to permanent change. Regional differentiation of density across urban land is not definite and remains inconstant. It is dominantly based on the variations of low-density. Because of the fact that, neighborhood centers are not legible and cannot be systematized carefully (Source: Urban Task Force, 1999).

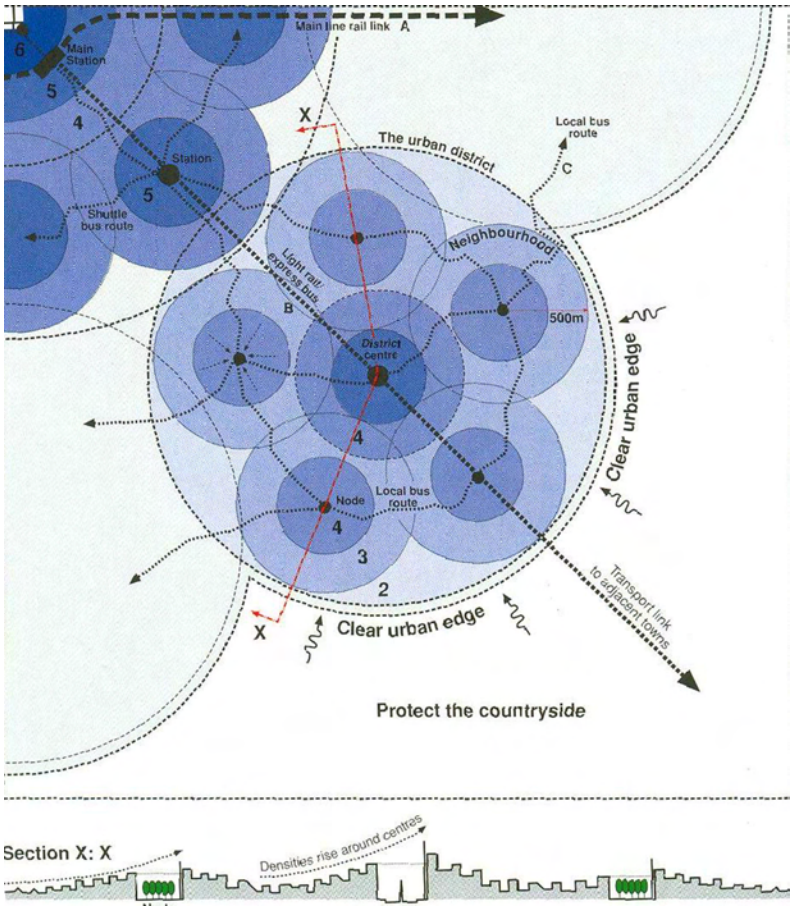


Figure 2.2: Schemata of compact urban settlement pattern.
(Source: Urban Task Force, 1999: 53)

Unlike dispersed one, we can definitely state the wholeness of settled area for compact urban form. Unified structure results from clear urban boundary, which enables the control of outward growth. It would be flexible or not, a legible urban edge is the major characteristic of the form. Urban densities are organized in a concentric diagram. The degree of density decreases from center towards less connected, peripheral areas. It generally concentrates around transportation nodes and central areas. Centers and different elements within the urban area are well integrated with each other. This makes

urban structure non-fragmented. That's why. the coordination of different modes of transportation can be ensured among the sub-centers. Since compactness shrinks the settled area, various local facilities can be achievable in walking distance (Source: Urban Task Force, 1999).

To identify urban compactness at district level, 'transect' can be a useful instrument. Transect is a definite sample area in section, which is generally used by botanists, and ecologists to follow the life of a discrete section of natural areas. In order to identify urban compactness, we can benefit from such a mode of classification by interpreting the separate sections in terms of their spatial configurations. Here, each pattern corresponds to certain degree of compactness.

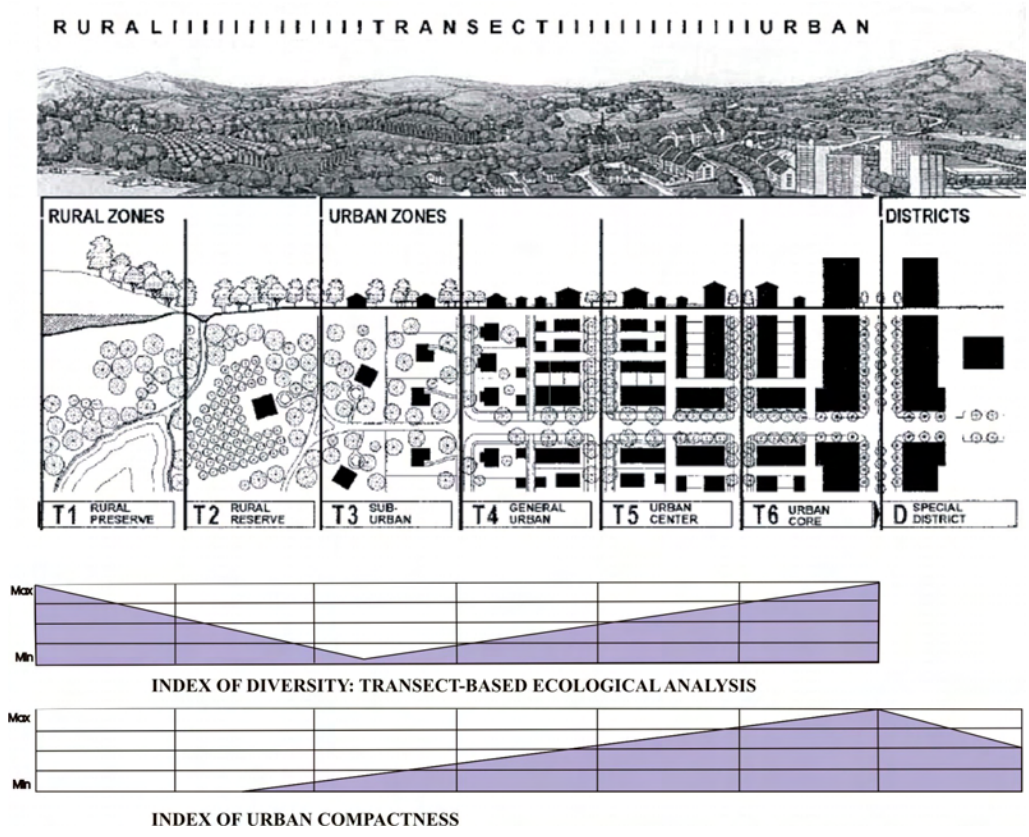


Figure 2.3: The Transect with the indexes of compactness and diversity.
(Adapted from: Duany, 2002: 256-58)

When we look into the diagram, we perceive that the indicator of diversity is in decline until mid-section of 'sub-urban' area. This is the natural diversity range that we do not take into consideration for urban compactness. Through the section of 'urban core' the degree of diversity is dramatically increases, while urban functions tend to diversify. At the section of 'special district', the level of diversity dramatically declines to zero degree because of the district's mono-functional character.

In order to benefit from the schema, we re-evaluate the sections with regard to urban compactness. By combining diversity and density indicators, we face to a clear increase in the level of compactness until the section of special district, while until mid-section of 'rural reserve' it is not subject to evaluate urban compactness. From the beginning of the section of 'special district' there is a slight decrease in compactness through the below level of 'urban center'. It directly results from the characteristic of spatial configuration, which is based on coarse-grained space-mass/solid-void relationship and its low level of diversity -less than that in urban center-.

If any object has a degree of compactness within itself, it does not always necessarily compose of a new compactness by gathering with the others. For the section of special district just such a situation is valid. In this section, masses have their own compactness figures but not referring to the whole, the district cannot become a fine-grained compact pattern, by itself. This is the important point which differentiates 'urban compactness' from 'object compactness'.

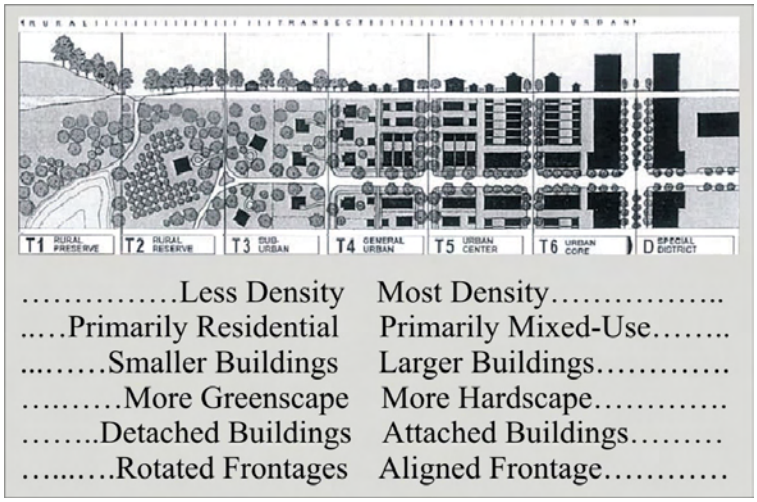


Figure 2.4: Main physical and functional characteristics of transect in terms of compactness of urban form.
(Adapted from: Duany, 2002: 256-58)

From that point of view, compactness of an urban form can be defined in two dimensions: physical and functional. While physical compactness refers to the spatial configuration, functional compactness indicates the intensity and the mix of urban activates (Thinh et al., 2002: 477). Different combinations of these components determine the spirit of space from rural to urban. When we look into Figure 4.4 we can notice that urbanity is strengthened through an enhanced compactness in both functional and spatial term.

2.2 Indicators

In planning literature, E. Burton achieves a dynamic definition of compact city from overall evaluations. Dynamism is the emphasized future of the contemporary definition of urban compactness. For her, *"To determine the potential of urban compactness, it is necessary not only to address the heterogeneity of the concept but also to differentiate between 'static' or baseline levels and changes in these levels through the process of compaction."* (Burton, 2002: 219). Within this perspective, Burton conceptualize compact city at two levels: *'product'* and *'process'*. Categories, which related to 'product', are 'high density' and 'mixed-use' and the one, related to process is intensification (Burton, 2002).

2.2.1 Centrality

Centralized physical structure and activity pattern can be taken as the first indicator of urban compactness. Hence, the existence condition of three components (high density, mixed-use and intensification) highly depends on centralization of urban form in mono/multi-nucleated urban structures. Intensification of an urban settlement homogenously through the whole of area is impossible. It is just because of the uneven concentration of urban services at selected nodes in urban land. This kind of a trend towards concentration results in a nucleated structure, which gives a compactness feature to the cities being polycentric or not. Therefore, the component of centrality of a compact urban form also provides a base for differentiation in compact urban patterns and creates various approaches based on multi or mono-centrality. In addition, different combinations of centrality -nodal, linear, concentric etc.- produce distinct compactness schemas. City's pre-existing or adapted transport infrastructure and geo-morphological thresholds mostly determine the alternative compactness patterns.

2.2.2 Contiguity: *Spatial Coherence*

Compactness requires a coherent development to a certain degree. Unless it is not achieved, a compact structure is unlike to be maintained. Hence, compactness of urban space highly depends on the unity of urban functions in a continual form. Otherwise, it is difficult to sustain intensification within a fragmented urban pattern.

Different from a fragmented space structure, contiguity also keeps the perimeters in limit. In a dispersed urban pattern, periphery of urban land or urban district remains ambiguous and perceptional differentiation between inner and outer becomes indefinite.

Degree of spatial coherence can be defined by the solid-void relationship in space. When the balance changes in favor of the proportion of the masses -buildings, structures etc.- within a definite area, the degree of contiguity of urban fabric relatively increases. Such an increase enhances the compactness character of space. In this sense, spatial coherence can be regarded as a planning criterion of urban compactness. Although, overemphasis on urban coherence by tight space structure –narrow alleys, shrank public spaces- can be result in sub-standard urban environments. Therefore, a balance between fragmentation by open spaces and contiguity by buildings should be ensured in the sense of urban space design.

2.2.3 Density*: high-density*

Density is the key factor for urban compactness. By means of density factor, urban compactness can be shaped horizontally as well as vertically. This reciprocal relationship between horizontal and vertical formation operates diversely. The lower the density, the larger amount of area needed, which is mainly engaged by roads and open spaces. This increases the diameter of settlement area and raises walking limits. Urban area requires more land to sustain its low-density development pattern. It is the main reason for urban dispersion. Alternatively, a moderate increase in density level results in a decrease in the area covered. It is experienced that, greater number of public amenities can be located within urban are through high-density. As a result, land use gains can be obtained in favor of compactness (Urban Task Force, 1999: 60,64).

Common assumption on high density is based on the maximization of public investments (infrastructure services and transportation), allowing efficient utilization of land. Basically, concentrated people and activities are supposed to bring about revenue generations and increasing rates of return. On the contrary, low-densities are associated with increasing costs per capita of land, infrastructure and services and socially low level of interaction. Within a negative perspective, high-density is considered in doubt when regarding its probable negative spin-offs like overloaded infrastructure and services, extra pressure on land and crowded living conditions in human settlements (Acioly, et al., 1996: 6). Those principal assumptions on density also represent a base for diverse argumentations on compact urban form.

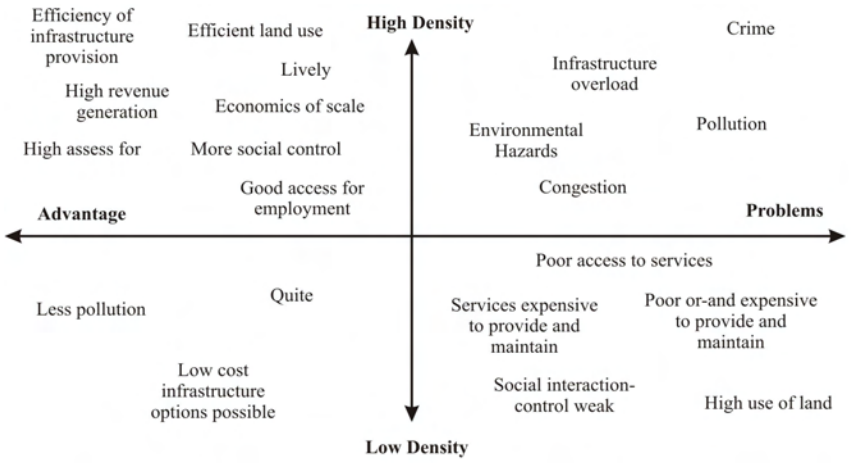


Figure 2.5: Advantages and disadvantages of high and low density. (Acioly et al., 1996: 7)

High density of population is to be associated with anti-social behaviors such as criminal conditions and infirmity (Michelson, 1970). Especially the experimental studies during the 1960s focuses on proving the relationship between overcrowding and anti-social behavior patterns by indicating its real results, such as decreased productivity, medical pathology and social disorganization. (Howard, 1976) In these studies there is a direct link between *density* and *crowding* and they are used interchangeably. Those studies also reinforced longstanding anti-urban prejudice held by Americans, who have been adapted to sub-urban way of life. Falsification of such claims comes from Stokols' socio-psychological model on crowding phenomena. He points out that density denotes a physical condition, limitation of space. Despite the fact that crowding is a multi-dimensional phenomenon characterized by spatial, social and personal factors. Therefore, density and crowding should be distinguished from each other (Stokol, 1972). For Haughton and Hunter, arguments against high-density living fall to environmental determinism,

"High density does not necessarily equate with overcrowding, there being a world of difference between high-density living in high-rise residential blocks with low numbers of people per room, and overcrowding in low-rise shanty town developments, with high numbers of people per room." (Haughton et al., 1994: 82-83).

Additionally, international comparisons on crime rates also indicate that, large and much denser European and Asian cities -including poor and dense Bombay/Mombai- have lower violent crime rates than less dense cities in America. Thus, higher crime rates can be related with specific cultural, political and economic conditions, rather than urban density (1000 Friends of Oregon, 2003b).

Currently, prevailing stance towards density issue is in favor of medium to high densities in the literature. Although it can be differently interpreted for a range of societies with separate urban

cultures, high-density generally admitted as a positive aspect for the urban way of life. By observing Hong Kong, the world's highest density city, Fung, systematizes benefits of high density under four sub-title:

- *Convenience*
- *Efficient use of resources*
- *Efficient and viable public transport*
- *Preservation of countryside* (Fung, 2001: 2-3).

Table 2.2: Set of density variables. (Source: Burton, 2002: 230)

DENSITY variables
• Density of population   • gross density / persons per hectare or households per hectare.
• Density of built form   • net density / dwellings per hectare.

• High-density subcenters (decentralized concentration)
  • density of most dense ward.
  • average density of four most dense wards.

• High density housing forms
  • percentage of total housing stock made up of higher density dwellings (terraces, flats, conversions).
  • percentage of total housing stock made up of lower density dwellings (detached and semi detached).
  • percentage of total housing stock represented by small dwellings (1-3 rooms).
  • percentage of total housing stock represented by large dwellings (7 or more rooms).

For a measurement of urban compactness by density indicator, Burton's definition would be beneficial for us. She categorizes the density factor in main four variables, which are population density, density of built form, density of subcenters and density of housing forms. Among them, population density refers gross density, while density of built form gives information on the number of dwellings per unit area as net density. Measures on the density of subcenters give sense whether sampled urban settlement have clusters of compact subunits or one dense core. Lastly, density of housing form implies building forms such as terraces, apartments, town houses (Burton, 2002: 221-223).

Table 2.3: Density indicators of built environment at neighborhood level. (Source: Cervero et al., 1997 : 206)

DENSITY variables

• Population density
  • population per developed acre
 	
• Employment density
  • employment per developed acre
 	
• Accessibility to jobs
  • expressed in a gravity model form, for zone, *i*, Accessibility Index= {…(jobs)*j* exp[… t*ij*]}, where i= origin (residential) traffic analysis zone, j= destination traffic analysis zone, t*ij*= travel time between zones *i* and *j* and … = empirically derived impedance coefficient.

With a conceptualization of built environment, Cervero and Kockelman categorize density not only with population and employment density but also in term of 'accessibility to jobs'. To them, the accessibility index serves as an understudy of relative proximity and compactness of land uses. Here, Here, accessibility is an indicator of commercial intensity. It measures a neighborhood's relative closeness to urban activities with regard to relative compactness. It consists of the items of travel times, number of jobs and measures of destination attractions (Cervero et al., 1997: 206).

2.2.4 Diversity: *mixed land-use*

Integration of land use by increasing the proximity of urban activities is the basic definition of mixed-land use. Since, the characteristics of *integration* and *proximity* well compromise with the connotation of compactness, mixed-land use automatically becomes a component of urban compactness.

Diversity indicator of urban compactness can be called as 'mix-of-use'. Mixed-use is the balance of residential and non-residential land uses and categorized in three aspects*: number and ratio of the facilities provided, horizontal mix of land uses* and *vertical mix of uses*. While the first indicator entails the degree of the variation in supply of services and facilities, *horizontal mix of uses* implies the individual developments of different uses sit side by side within urban area. Additionally, *vertical mix of uses* refers the urban characteristic of 'living over the shop' (Burton, 2002: 223-224).

Table 2.4: The set of mix-of-use indicators. (Source: Burton, 2002: 232)

MIX-OF-USES variables

• Provision of facilities
  • number of key facilities for every 1000 residents.
  • ratio of residential to non-residential urban land.
 	
• Horizontal mix of uses
  • percentage of sectors containing four or more key facilities.
  • percentage of sectors containing four or more key facilities.
  • percentage of sectors containing all key facilities.
overall spread of key facilities.
 	
• Vertical mix of uses
  • living over the shop: area of retail space that includes accommodation (as a percentage of total retail space).
  • mixed residential and commercial uses: number of flats in commercial buildings (as a percentage of all built flats).

One of the most complicated descriptions of the diversity issue of urban form comes from Cervero and Kockelman. They provide a wide range of variables to confine diversity definition. Dissimilarity among land-uses, entropy for land-use categories, vertical mixed-use on the site, intensities of land-uses, activity center mixture, commercial intensities and proximities to commercial-retail uses are the variables they use (Cervero et al., 1997: 206). Here, *intensification* is integrated to the classification of diversity with its static interpretation as *intensity*. Thus, intensification factor is not excluded in the whole.

Different from the other definitions, the term of 'entropy' is employed to depict diversity. Entropy quantifies the degree of mixed-use across land-use categories in the settlement. Additionally, 'dissimilarity index' is used for determination of the degree of the differentiation of hectares designated. (Cervero et al., 1997: 207).

Table 2.5: Components of diversity. (Source: Cervero et al., 1997: 206)

DIVERSITY variables

- Dissimilarity index
  - proportion of dissimilar land uses among hectare grid cells within a tract. . (For each tract, computed as: $\{[\Sigma_i^k \Sigma_8^1 (X_1/8)]/K\}$, where K = number of actively developed hectare grid-cells in tract, and $X_1 = 1$ if land-use category of neighboring (i.e. abutting or caddy-corner) hectare grid-cell differs from hectare grid-cell j)

- Entropy
  - Mean entropy for land-use categories among hectare grid cells within a half-mile radius of each hectare grid cell within a tract. (For each tract, it is computed as: $\{\Sigma_k[\Sigma_i P_{jk} \ln(p_{ik})]/\ln(J)\}/K$, where: p_{ik} = proportion of land-use category j within a half-mile radius of the developed area surrounding hectare grid-cell k, j = number of land-use categories, and K= number of actively developed hectares in tract. The mean entropy ranges between 0 (homogeneity, wherein all land uses are of a single type) and 1 (heterogeneity, wherein developed area is evenly distributed among all land use categories)

- Per developed acre intensities of land uses
  - classified as: residential, commercial, office, industrial, institutional, parks and recreation.

- Vertical mixture
  - proportion of commercial/retail parcels with more than one land-use category on the site

- Activity center mixture
  - entropy of commercial land-use categories computed across all activity centers within a zone
  - proportion of activity centers with more than one category of commercial-retail uses proportion of activity centers with stores classified as: convenience, auto-oriented, entertainment/recreational, offices, institutional, supermarkets, service-oriented

- Commercial intensities
  - measured as per developed acre rates of: convenience stores, retail services, supermarkets, eateries, entertainment and recreational uses, auto-oriented services, mixed parcels

- Proximities to commercial-retail uses
  - proportion of residential acres within l/4 mile of: convenience store, retail-service use
  - developed acres within l/4 mile of: convenience store, retail-service use

proportion of residential acres within l/4 mile of: convenience store, retail-service use

Since mixed land use provides a more diverse and sizable population within a compact space structure, this enables vitality and security in urban space with well-integrated streets, public spaces and retail activities. Economical consequences of such a space organization are substantial fiscal and economic benefits. It is certain that commercial uses in close proximity to residential areas have higher property values with high rate of profits and raising local tax receiving (Smart Growth Network, 2002: 2).

Like in density issue, resource efficiency is also valid in land-use diversity. Shared parking, granted by multiple use of land, is a way for spatial efficiency in urban areas. For instance, in an office-residential combination of mixed-use settlement, residents and outsiders of offices can use parking spaces periodically day and light. Such an activity pattern can shrink the scale of activity centers by as much as 25 percent. In other words, physical compactness can be available by close configuration of land uses either vertically or horizontally.

When urban compactness dominantly determined by density measures without appropriate level of mixed-use, some problems on urban performance emerges. Concentrated and densified mono-functional parts of the city are under pressure during the day, while high investments on infrastructure and energy supply are all under-utilized during another time section of the day (Asioly, 1996: 12).

2.2.5 Intensity: *high-degree of intensification*

When we assert compactness for urban settlements, the feature of the dynamism of urbanization compromises with the issue of compactness. In a broad term, human settlements tend to evolve in time, by growing or shrinking in size and dimension, under the affects of social, political and economic forces. When we consider urban compactness in process, intensification gains validity as a third factor of compact urban form.

To Titheridge, Hall and Banister, there are four basic development strategies forming urban structure and intensity variable can be positioned in one of them:

- *Intensification*: Housing and employment development are concentrated within existing urban area. No new retail centers are created.
- *Extensification*: Housing and employment concentration occurs around the periphery of the main urban area. Like intensification no new retail centers are created.
- *Decentralization*: Housing and employment development are located in rural nodes throughout the county.

- *New town*: All new urban development is located in a single new settlement, in relatively rural part of the region. A new retail center is created (Titheridge et al., 2000: 155).

There is no doubt that, the first development strategy represents the most closed-relationship with intensity variable, whereas extensification is the most opposing process among them. Decentralization, here, has a dual-character. If it is realized within a concentration process, it supports intensification. Within counter development pattern -like in common decentralization experiences based on low-density low-rise urbanization- it does not contribute urban intensification. In both ways, intensification degree of existing decentralized city tends to decrease. Intensity factor for new towns depends on the urban transformation process fallowed later.

The basic feature, which makes dispersed, scattered, low-density city different from compact urban form, is not its rapid expansion and increasing its size of urban area, itself. Instead, the main point, which makes sprawl as opposing alternative to compact city, is the lack of synchronization between population increase and growth of urban land at second dimension. As an extreme example to sprawl-typed urban development, between 1965 and 1990 while population of New York metropolitan area grew by 5 percent, the developed area of the region expanded by 31 percent (de Roo et al., 2000: 5). This is the characteristic of scattering urban form, which does not allow any intensification process within the urbanized area. In this case, there is decreasing level of formal/functional integration. Counter condition refers to urban compactness. An urban settlement can turn into a compact form or keep its compact character alive, provided that it should realize its development process in an intensified form. In this process if development occurs within city limits or adjacently existing urban fabric, then compactness index becomes positive. If new developments take place free from the current urban form, this is the case that the settlement losses its compactness characteristic. In this case, the end product of the process is a disintegrated, fragmented and patchwork-typed urban form.

Table 2.6: Indicators of urban compactness. (Adapted from Burton, 2002: 227-238)

INTENSIFICATION variables

• Increase in population (reurbanization)
 	
• Increase in development
  • number of dwellings completed in ten years for every 1000 households.
  • number of dwellings completed, in ten years, per hectare. (gross area of district).
  • number of dwellings completed, in ten years, per hectare. (residential built up area of district).
  • percentage change, in dwellings with 1-3 rooms, in ten years.
  • percentage change, in dwellings with 7 or more rooms, in ten years.
  • derelict land reclaimed, in ten years, as a percentage of total residential built up area.
  • average number of planning applications granted annually, in ten years, for every 1000 residents.
 	
• Increase in density of new development
  • percentage change in conventional density in ten years (gross density of districts).
  • percentage change in population weighted density in ten years (average of ward districts).
 	
• Increase in density of sub-centers
  • percentage change in density of most dense ward in ten years.

According to Burton, who conceptualizes urban compactness under three indicators, intensification is a generic term for the urban processes of containment and consolidation. It is the proxy measure to reflect density increases. Thus, it may be considered in terms of three dynamics: *increase in population, increase in development* and *increase in the mix of uses within city boundary* (Burton, 2002: 225). While *increase in population* refers reurbanisation process by raising residential capacity through subdivision of existing urban land and bring existing vacant housing stock back into use, *increase in development* means redevelopment of unoccupied land at higher densities and infills in open inlands. Measurement of *increase in the density of subcenters or nodes* is aimed to examine the centralization of urban facilities within clustered trip ends. It is important to determine the density surfaces through the city whether it is uniform or multi-focused for promoting efficient intra urban travel pattern. Finally, *increase in density of new development* detects the compactness degree of new developments with respect to a district or a ward (Burton, 2002: 224-227). For all, the period, subject to measure, is ten year. This is an enough time period allowing observable changes in urban densities.

On the other hand, Scoffham and Vale take the concept of intensity as a final statement rather than a process. To them, there is a sharp distinction between density and intensity of urban development. While density is a quantitative measure of number in an urban area, intensity represents a more subjective measure on 'built-up-ness and physical urbanity'. From that point, intensity is more tangible than abstract essence of density measure, thus more operational to evaluate 'real' form of

built environment. To them, "...Density, in itself, is of little importance unless it is related to built form. Compact is meaningless unless it is related to some facts and figures." (Scoffham et. al, 1996: 66).

2.2.6 Fine-grain

Fine-grain can be taken as a criteria of an enhanced urban compactness. Conceptual definition of *grain* is constructed on local interrelations between similar and dissimilar elements without any definite reference to overall pattern. Compositions of the elements in space differentiate with regards to coarse or fine grain formations. Elements can be concentrated in a cluster with legible boundary or can be closer with other types in a blurred transition (Lynch et al., 1958: 205-206). Those elements may be building types, urban functions or segments of social groups. The grain of a mix is *fine* when elements are widely integrated among other elements, and it is *coarse* when separation between clusters is exact and legible.

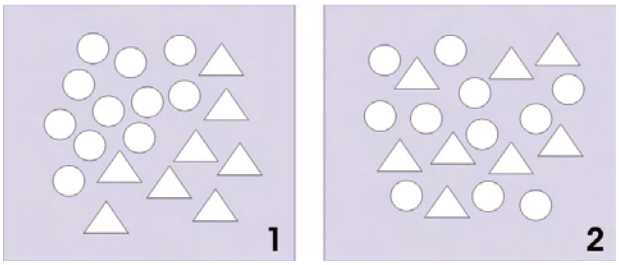


Figure 2.6: A *course (1)* and *fine- grained (2)*

If we identify the grain of urban space as *separation/dispersion of densities fine or course in quantity within a boundary of district* (Lynch et al., 1958) it can be claimed that the finer grained urban space can more easily be increase its compactness. Grain is in positively proportional with *diversity*. When we take mixed use as a component of urban compactness, fine-grain comes to the agenda as a complementary factor for urban compactness.

For urban space, grain is meaningful both in formal and functional term. Functionally, large businesses have greater self-sufficiency and they tend to be located at designated urban areas. Contrary, small ones tend to be closer with customers and suppliers in a fine-grain. A vital urbanity is mostly ensured by the collection of small elements of local economy within a commercial diversity. Fine-grain in formal term -urban pattern and building form- provides the maximum adaptability of new uses and flexibility to integrate different ones (Montgomery, 1998: 103).

Figure 2.7: Eastgate Town Center Redevelopment Project-Chattanooga, Tenesse
(Source: Benfield et al., 2001: 101)

By definition, subdivisions in urban area play a critical role to produce more fine-grained urban fabric. Today, most of redevelopment projects of bulk volume-shopping centers and their surrounding areas create a definite grained space structure. (see: Figure 2.6) New adapted arrangement based on a fine-grain-urban form enables different urban activities to allocate together in a mixed-use pattern. That makes the transformation vital and public input intensive.

2.3 Spatial Features

While density is an important factor for technical and financial assessment of infrastructure and public services in urban planning, it is also a key spatial parameter for human settlements in the expression of *the number of dwellings per unit of land as well as the population per unit of land.*

Density as an abstract notion cannot be solely a compactness factor enough. Any degree of urban density can be configured in different types of space organizations. Same degree of density can be assured not only by high-rise building type but also in medium rise settlement patterns within different coverage areas. This alternation results in various open space compositions, street structures and layouts. Configuration preferences directly refer to the degree of compactness of an urban district. The balance between coverage area and overall height of built-up area gives compactness degree to the area. Because of that reason, abstract land-use planning decisions should be coded by 3D-design solutions. These evaluation criteria can be tested on three different urban settlement configurations.

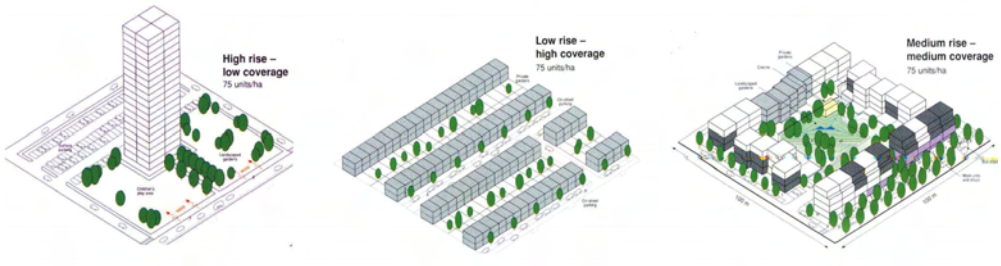


Figure 2.8: Three different settlement configuration of same urban density-75 units/ha- (Adapted from Urban Task Force, 1999: 62)

The first figure illustrates high-rise low coverage development. Here, the high-rise building block standing on a plot area conceivably larger than its floor area. There is no direct relationship between building and its surrounding open space. There is an imbalanced figure-ground relationship in favor of the abandoned surface areas.

The second one exemplifies a street layout with two story town houses with private gardens. Different from the first there is a street pattern defined by various low-rise masses. Yet, low rise compels high area coverage and does not allow any communal open space and a variation in urban space.

The last one is a typical example of medium rise development schema, with up to four stories. By increasing the average height of buildings, the coverage area could be decreased comparing the second one. Therefore a common urban open space can be provided as the focus of layout. Active street frontage and varied urban landscape is the other advantage of the form.

Which one is the most compact in form? To give an answer to such a question, 3rd and 2nd dimension should be taken into account together. If we take one of them solely, our interpretation could be wrong, since, in the 2nd dimension, the most compact one seems to be second alternative with its high level of coverage (see: Figure: 2.8).

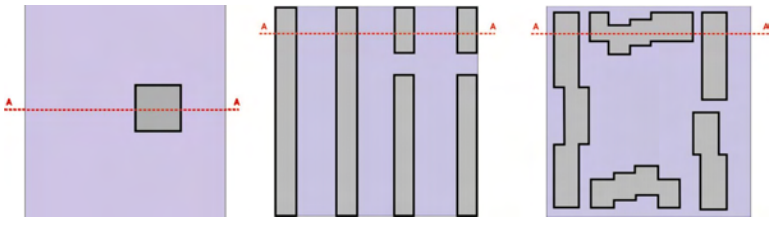


Figure 2.9 Plan abstractions of the areas.

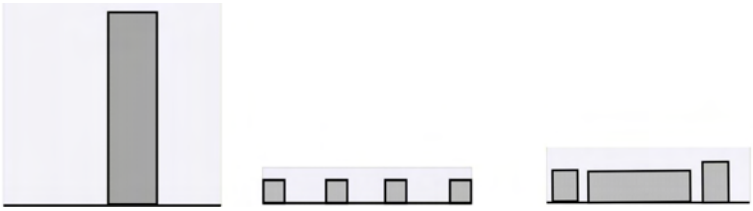


Figure 2.10 Sections of the plans.

On the other hand, in the third dimension, first figure can be accepted as the most compact one with respect to high-density criteria (see: Figure 2.9).

By evaluating them with two component of density -coverage and rise-, our compactness identification would be in favor of the third one: medium rise medium coverage. Here, our definition does not result from the design advantages; it serves, but its intrinsic structure through compactness. On the other hand, formal characteristic of third configuration produces an efficient design solution. It is important that such a diagram also demonstrates whether same density can have varied design solutions in terms of massing and layout.

Such a conceptualization of high density urban pattern exactly coincidences with the Walker's one. To Walker, there are three types of high-density settlement configuration, which can be normatively classified as 'bad, better and the best'.

- *Bad:* Tower blocks. Communal green space is provided at the base of buildings. Feeling communally possession of space is little because of the lack of central focus and sense of place.
- *Better:* Terraces. Strict divisions between houses with own garden and yard. Terracing's linear structure does not allow any central area which can be turn into a public space.
- *Best:* Squares -*can also be read as courtyards*- Although it commands similar densities to either block structure or terracing, the houses overlook a central garden creating focal point, sense of safety and feeling of community (Walker, 2003: 42).

Figure 2.11: American Suburb: Antinomy with compact urbanity.- low-density, low-rise, monofunctional and fragmented- (Source: http://www.bikexprt.com/bikepol/facil/sprawl.htm)

Figure 2.12: Housing development site in Ankara, Turkey: Functionalist space structure. (Source: Günay, B., 1999 *Urban Design is a Public Policy*, METU Faculy of Architecture Press, pp 49)

Figure 2.13: San Fransisco Bay Area, U.S.: Modern Regularist Urban Compaction. (Source: http://lambda.pha.jhu.edu/web/album/Digital%20Globe/slides/san_francisco_IOD032102.html)

Figure 2.14: Amsterdam inner city area: Traditional continetal urban compactness- fine-grained, medium-rise, high-density- (Source: City postcard, 1998)

There is a dominant fallacy that high-density urban pattern equals to high-rise urbanism and directly means compact urban form. Such an over simplistic point of view is derived from the lack of conceptualizations in minds on the inter-relationship between land-use and built form within urban design perspective. Different arrangement of buildings in space can be refer same density level in planning term, but different compactness pattern in design term. Bernick and Cervero also illustrate the point, that designing medium to high density does not mean high-rise urbanism and point block structures. It can also be ensured by medium rise development patterns (Bernick et al., 1997: 142-146) However, re-zoning of a community for smaller lot sizes is the intricate side of the problematic.

With regards to mass-space configuration, Orrskog and Snickars refer to three distinct prevailing urban design/planning doctrines in the 20th Century: low-rise garden cities -suburban pattern-, functionalism with open and dense city areas and regularism in dense and high-rise settlement pattern

(Orrskog, 1992: 117). When we look into the other different settlement patterns in real, we perceive that they are reproduced by different combinations of these major space compositions. Each of the patterns, quoted above, represents a separate approach to urban compactness. While garden cities represent a low-level of urbanity (*suburbanity*), in formal and functional terms, third pattern illustrates the common image of metropolitan cities within maximum emphasize on modern urbanity and as extreme alternative of suburbanity. Basically, the second and third urban pattern resembles each other with regard to their shared attention on high-rise urbanism. Nevertheless, the basic drive behind functionalist space organization is more urban problematic oriented than the regularist one. Space of functionalism has a task to re-configure urban space by solving hygiene and traffic problems of modern urban life. Because of the reason that it suggests a combination of air, sun and space with high-rise building blocks in open areas. From the point of compactness, the second and third space configurations offer two versions of urban compactness in the 20th Century. In contemporary definition of urban compactness, functionalist urbanism may not be considered as a compactionist alternative today. Although with its high-rise building structures it feeds high-densities, functionally it does not support compactness. Functionalist separation of diversified uses in urban space decreases the level of mixed land use, which is prominent variable of urban compactness.

Another alternative form of urban compactness to these two approaches is high-density medium-rise urbanism. The reason why Orrskog and Snickars do not refer this type of urban pattern is that such a configuration does not generally utilized as a design policy in 20th Century Modern Urban Planning practice. High-density medium-rise urbanism is mainly the reproduction of Mediterranean urban pattern based on fine grain, intense and diverse space structure. In such an urban image compactness requirements from contemporary definition of compact urban form can be much more easily realized. Other two compactness alternatives -regularist and functionalist ones- are far from giving opportunities to mixed and diversified land use pattern. They embark on coarse combinations of mono-functional buildings without a fine-grain urban tissue. This kind of an urban compactness is mostly characterized in the historical core of the European cities.

In energy concern, high-rise compactness contains some disadvantages. By design, high-rise development requires highly energy-intensive construction material. It increases the 'energy investment' in infrastructure. Due to the weather exposure, it has high heating requirements and usually results in the dispersion of renewable energy. Since they are generally in detached, block structure, high-rise compactness is deprived from the energy efficiency of attached buildings and terraced houses-based medium-rise urban forms (Owens, 1986: 35).

On the one hand, Burton calls attention to another important point of the issue. The measure of urban density generally implies gross density of local authority districts -neighborhood, metropolitan area or county etc.- in persons per hectare/acre. Yet, gross density may deceive us where the boundary of built-up area may not coincidence with the legal boundary of district. Subtraction of open space from overall area displays the value of net density, which gives a reasonable sense of compactness. On the

other hand, problem cannot be solved completely at this point. If the district, which is subject to measure, is in non-residential area, the data on people per unit can also be misleading too. There are two solutions to such a problematic:

- Measuring residential density by omitting the area of non-residential land,
- Employing the concept of 'dwellings per hectare'. (Burton, 2002: 228-230).

There is a dominant prejudice against high-density in common sense of communities. In order to overcome this prejudice, Bernick and Cervero suggest a set of techniques, which are ways to increase the quality of dense urban environments: Extensive landscaping, involvement of parks, public spaces and green niches into neighborhoods, varying building heights to loose monotonous visuality, detailing rooflines, below-grade parking and designing mid-rise buildings on podiums with tuck-under (Bernick and Cervero, 1997: 85).

CHAPTER 3

EVOLUTION OF URBAN COMPACTNESS

"People come together in cities in order to live.
They remain together in order to live the good life." (Aristotle)

In this chapter, a brief explanation about the historical transformation of the compactness of urban form from antiquity to present is given. After a generic overview, futuristic envisions about urban compactness is explained.

3.1 Urban Compactness in History

By definition, the concept of 'city' implies a certain concentration of people, which brings them together to stimulate them and their potential of dynamic activities in a permanency. Such a social concentration implies its own compactness degree to urban form in a spatial term. Development of an urban form is subject to a complex and multi dimensional process, which is shaped by the mode of production, socio-spatial traditions of societies, changing perceptions of human developments and so on. In spite of specific conditions and development levels of urban societies, it is possible to depict the history of urban compactness by classifying it in separate periods. Each historical stage produces its original representation of compactness within separate historical periods. Therefore, each urban form, as a specific relation of time and space, should be regarded within its own framework of economical, political and cultural structure.

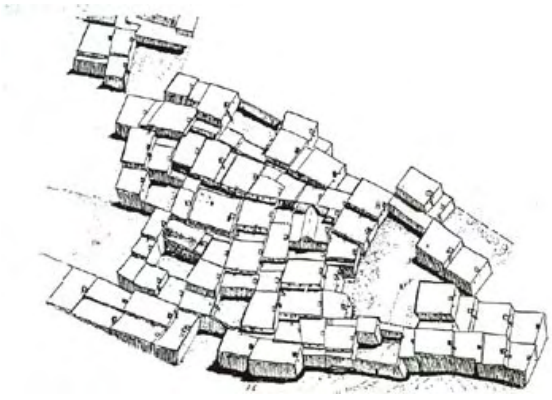


Figure 3.1: Bird's eye view of one sector of Çatal Hüyük, Konya, Turkey: *Early urban compactness*
(Source: Moholy-Naggy, 1969: 36)

We can trace early compactness patterns from Neolithic settlements, where human civilization had introduced early version of the settled way of life. As a real case, Çatal Hüyük in Anatolia (5th millennium B.C.) is an example to such an 'embryonic compactness'. After the excavation it has been clearly observed that the town is settled out as a closely integrated unit and sharply separated from surrounding land by well-defined boundary of built-up masses (Moholy-Naggy, 1969: 35). Regarding, their high-density within continuous house walls, -like Jericho in Palestine- early medieval settlements can be modeled as first archetypes of urban compactness.

In ancient times, production and service structure was major determinant of urban compactness. The first coexistence in close spatiality is the result of a need for proximity of independent craftsmen, who could better serve to separate agricultural villages by being together. This tendency, which derived from defense and power incentives, can be considered as emerging soul of centrality and early compactness in space (Sherlock, 1996: 289).

Another main archetypal compact urban form is medieval city. Significant difference of Medieval Cities from the prototype of the Classical City (8th-4th century cities) is their compact urban form. Wars among rival feudal and increased battering techniques forced construction of fortifications. It was not only an urban engineering but also was an elementary factor for the form of Medieval City. Since, fortifications were extended to include surrounding dwellings in unsafe countryside, the city grew within the bound of city walls. Although, population was small, urban space became limited within bounded urban area, in time. The result in everyday life was congestion, lack of water supply and sanitation by increased density (Gallion et al., 1980: 31-32). The Neoclassic City developed on that urban structure while structuring outer city walls and introducing piazzas and boulevards into existing compact surfaces. At the same time, former compactness pattern were replacing by vertical one, three to four storey housing transformed traditional two storey building stock. Naturally, it increased the influence of existing problems in restricted physical size. This urban condition had existed until the emergence of Baroque City, which extended through open space of countryside (Gallion et al., 1980: 37-45).

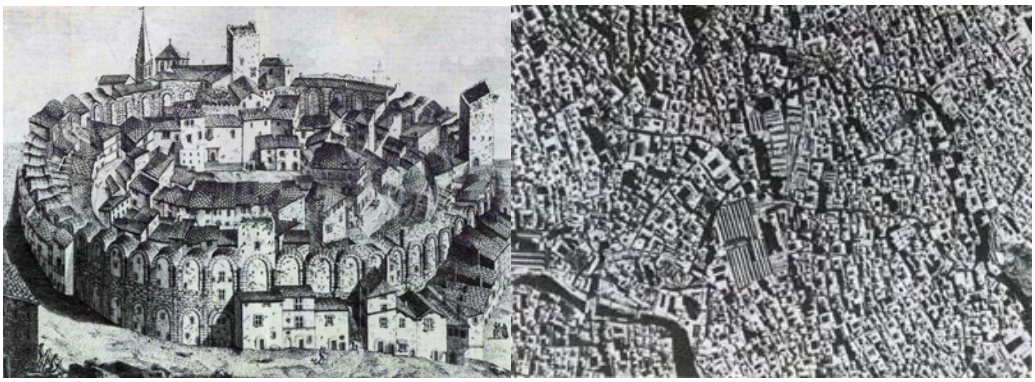


Figure 3.2: An illustration of medieval compactness: intensified and fortified and an aerial view of traditional Islamic City-Fez, Morocco- (Source: Girouard, 1985: 36,Lynch, 1987: 383)

In addition to continental city in medieval Europe, the Islamic City is another prototype for historical urban compactness in the same period as corresponding to the westerns. Islamic Cities in medieval times represent extreme version of centralized, compact settlement forms. They were contained within a wall controlled by gateways and dense quarters within the city were very closed and intensely private. Close-packed houses produced narrow cul-de-sacs and courtyards (Moughtin, 1996: 96). Many traditional Islamic cities are still in that kind of a compact urban pattern, today.

Beyond the practical spin-offs of urban density, concentration within city walls provided an objective condition for common sense of security and emerging sense of place in pre-modern settlements. As a counter existence against limitless open area of nature, urban place comes into view -where *piazza* was born- in within a definite density. This is the root of the common thought about density, which is understood as a desired attribute for urbanity and urban culture today (Kushner, 2000).

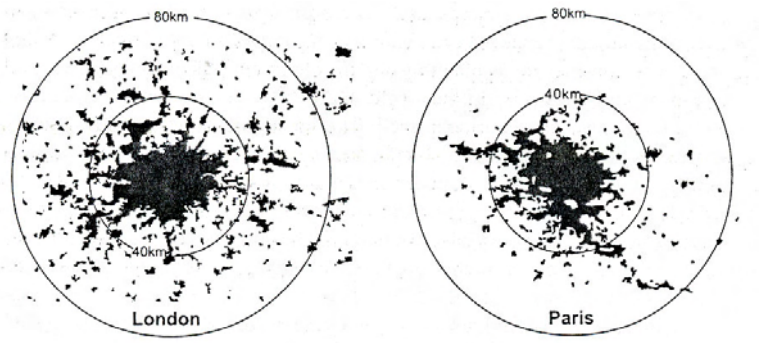


Figure 3.3: Metropolitan forms of London and Paris: Historical background determines today's spatial sutructures. (Source: Jones, 2000: 46)

Importance of the history of urban compactness is derived from its function to understand the current forms of contemporary cities. As an example to the point, the compactness degree of modern cities in Europe differs from the others mainly based on their historical development processes. In their urbanization background, fortification walls play the most important role to shape urban form and its compactness. In England, after Magna Carta charter of English political and civil liberties, which was granted by the King in 1215, towns which were previously protected by city walls did no longer need to be defended strongly. The development of city-states in mainland Europe was constrained by their fortifications, while English counterpart expand beyond their defensive walls in the same time. For example in Paris, the city walls were reproduced in continuous rings until 1870, the siege and commune of Paris. Even today, the population density of Paris is more than that of London and almost its total region covered by built-up area is occupied within about 50 kilometers diameter ring -See Figure 2.3- (Sherlock, 1996: 289).

Determine the forces behind the formation of modern city in order to understand the causalities of the transformation of urban compactness in historical context is important. To Freeman et al., changes in

'techno-economic paradigm' depends on external factors such as incremental and radical innovations. Once new technology and infrastructure systems emerge, they are fallowed by certain paradigm. Such structural changes in production are appeared in organizational systems economically and socially (Freeman et al., 1988). Here, the importance of the issue is stemmed from its relationship with urban form in transformation. Since each model of city form is the final-product of prevailing techno-economic structures. When we correlate main urban development schemas with the components of their historical economic periods, we can easily perceive the close relation. From this point of view, Freeman and Perez's conceptualization of the evolution of the production and business cycles in modern times can be beneficial for us. In the schema, called as *The Five Long Waves,* each historical period denotes different combination of mode, factor and paradigm of production, which can be applied to space by definite urban formation (see: Table 3.1). There is no doubt that such a schema is only valid for the countries, which have been realized classical phases of development from mercantilism to information age.

In the diagram, each economic formation represents itself with a specific degree of urban compactness, spatially. Diffusion of appropriate infrastructure continuously transform former urban compactness pattern and introduce a new one. Thus, we can develop our conceptualization of the history of urban compactness in modern times by accordingly grounding this periodisation.

Table 3.1: The Five "Long Waves" (modes of growth) and the models of city form produced. [1] (Adapted from: Freeman et al., 1988: 50-53)

Wave	Periodisation	Description and Main Industries	Key Factor Industries	Previous Limitations and New Solutions	Business Paradigm and Forms of Cooperations	City Form
1.	1770s/80s to 1830s/40s "Industrial Revolution" "Hard Times"	Early mechanization era. *Iron-working *Water power	Cotton and iron	*Limitation of scale in domestic system. *Greater productivity through mechanization.	Capital-based local industries and small firms.	*Pedestrian/ Walking-oriented City (Early Industrial compactness -intensified and dense)*
2.	1830s/40s to 1880s/90s "Victorian Prosperity" "Great Depression"	Streampower and railway era. *Machine tools *Steam engines	Coal	*Limitation of location by water power. *More flexible location choice by new transport systems.	Larger firms employing thousands.	*Transit City & Railroad Suburbs- medium density residential area and dense city center-*
3.	1880s/90s to 1930s/1940s "Belle Epoque" "Great Depression"	Electrical and heavy engineering era. *Electrical machinery *Electricity supply and distribution.	Steel	*Limitations of inflexible belts driven by one steam engine. *Improved layout by group drive of electricity	Giant firms, regulation or state ownership of natural monopolies. Concentration of finance capital.	*Streetcar Suburbs (Early transit– oriented compactness)*
4.	1930s/40s- to 1980s/90s Golden age of growth and Keynesian full employment "Crisis of Structural Adjustment"	Fordist mass production era. *Automobiles, trucks, tractors, aircrafts, highways and airports.	Energy (esp. oil)	*Limitations of scale of batch production. *Assembly line production techniques. *Speed and flexibility of automobile and air transport.	Multifunctional firms, multi-plant locations, increasing centralization and hierarchical control.	*Automobile City (Extreme urban growth: dispersion, fragmentation, urban sprawl and mono-functional land-use pattern)*
5.	Late 20th century «Global recession » next wave of economic activity	Information technology *Tele-communication network and control systems. *Optical fibers. *Databanks *Satellites	Chips (micro-electronics)	*Limitations of inflexibility of process plant and energy-material intensity. *Flexible manufacturing by electronic control system and components.	Networking, systems of large and small firms, flexible specialization, close cooperation in technology.	*Concentrated Decentralization (neo-compactness)-high-density interconnected urban nodes- OR Atomization of settlement structures.*

[1] The last column is adapted by us.

Before early mechanization era, cities were characterized by relatively high-density urban environment -100 to 200 pph-, mixed land-use with small-scale production, narrow and irregular street pattern, which was devoted to pedestrian oriented intra-city movement. Compact form of settlement, enables destinations to be reached on foot in half an hour on average. (see: Figure 3.4) Many historical cores of European cities and large part of the Third World cities still have this intrinsic feature of urban compactness.

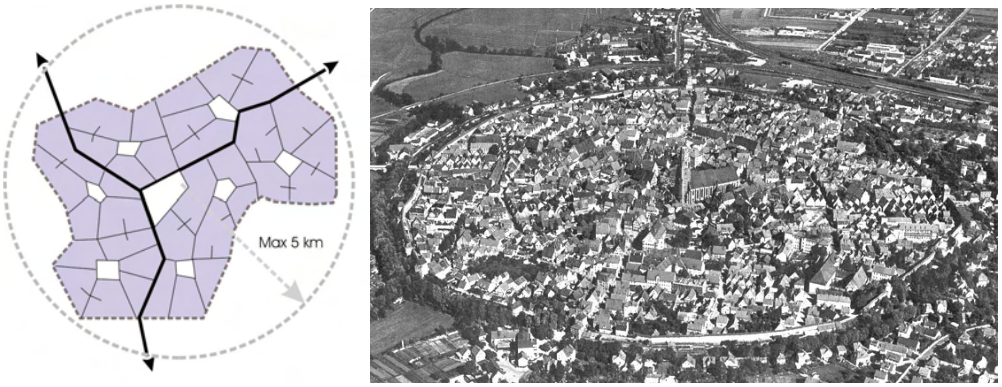


Figure 3.4: Schematical illustration of traditional walking city (source: Newman et al., 1999: 28)

In early industrialization, factories and their workers existed in close proximity because of the lack of an affordable transportation. Therefore, except the large metropolises, industrial settlements were in limited size for the most people on foot. From that side, they resembles to traditional walking cities with their pedestrian oriented urban form. Gillham's depiction of Boston makes a sense about the characteristic urban compactness in that time:

"…Until about 1850, the urban core of Boston was the entire city. It was a dense, walkable, mixed-use, commercial, industrial and residential area with a radius of about two miles. This radius placed most destinations within about a half-hour walk from any point in the city." (Gillham, 2002: 25,29

Through the development of industrialization, compactness degree of cities increased while centralization process was being carried on. Concentration of population in large urban areas was a precondition of the economies of agglomeration. Indeed, bad reputation of urban compactness and controversial approaches originate from the defective urban conditions of the early *industrial compactness.* Those conditions, like congestion, increasing commuting time and deteriorated sanitation, were developed by population pressure and detrimental effects of massing industries within the restricted area of urban geography. Actually, the origins of modern urban planning derived from overwhelming criticism of increased dirt, crowding and congestion of so-called 'coketowns', which are depicted in the writings of F. Engels and C. Dickens.

Around metropolises, a dozen of factories, each can employ about two hundred workers, became the nucleus of compact industrial towns with adjacent slum areas. Within metropolises, the conditions were much worse. Rising land prices in the centers crowded the houses and decreased the open space and gardens by maximizing floor area ratios. Dense building processes made dwellings with no daylight and ventilation. In Paris, the population density at that time, were 37,000 people to square kilometer. Families were living at two persons and more per room in the city (Hall, 1984: 19-23).

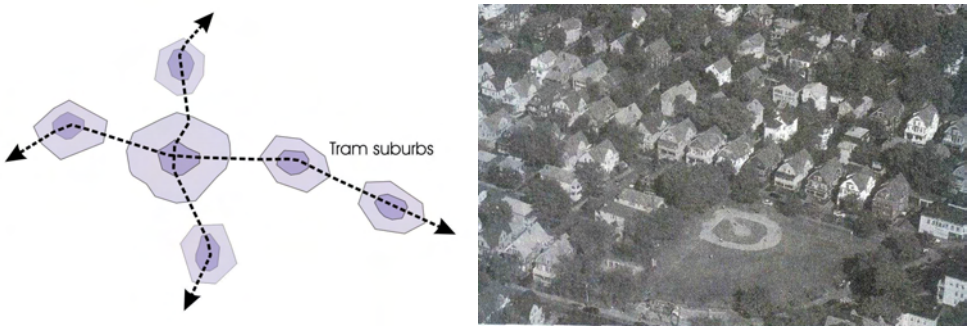


Figure 3.5: A schematical illustration of transit city and a streetcar suburb in the U.S: *medium rise urban compactness.* (Source: Gillham, 2002: 28)

The coming of steam-power engine and railway did not encourage dispersion of populations, but rather concentration of them within a new pattern. From about the 1840s until the 1880s, introduction of rail-based urban transit had made cities grown along arterial routes of trams or in concentrated nodes along the lines. Emerging trend showed itself with the expansion beyond pre-industrial compact centers and creation of early suburbs, which are called *railroad suburbs*. By emergence of the transit, trams or streetcars produced linear dense developments along the corridors while trains were creating subcenters around railway stations (see: Figure 3.5). Economically, because of increasing land values, extensive uses like manufacturing industries or garden-oriented housing tent to locate towards more affordable peripheral areas, rather in compactly contained cities. By implication of new transportation technology a new pattern of urban compactness emerged (Anas, 1997: 2-2). Today's historic star-shaped compact cities -such as Hamburg and Copenhagen- formed in this phase with the orientation of rail to the city center by creating surrounding medium to high-density inner city suburbs (Scheurer, 2001: 183-85).

With the third wave, rapid development of electrical engineering for industrial production becomes also effective on settlement structures. While, horse-drawn streetcars were replaced by electric street railways, a new territory of urbanization made the size of cities increase through expanded geographies. On the other hand, transit-oriented development let settlements to keep their 'urban' character in a certain compactness level. Lot-sizes were about four hundred square meters and housing consisting of two and three family homes. In the center of neighborhood there were a transit station

and a public space. The pattern and the scale of street were allowing convenient walking distances to transit nodes (Mineta Transportation Institute, 2001: 3; Gillham, 2002: 28).

Until the 1880s, in the center of cities, concentration of had provided an easy access to business contacts and information exchanges. Without telephone and fax machine, businesses necessitated being close to one another. That factor keep centers compact for a long time, even after introducing electrification. Since, after the invention of electric elevator and steel beamed construction techniques, central buildings could no longer restricted to maximum five-six floors (Palen, 1995: 33). This mainly encouraged vertical compaction of central cities.

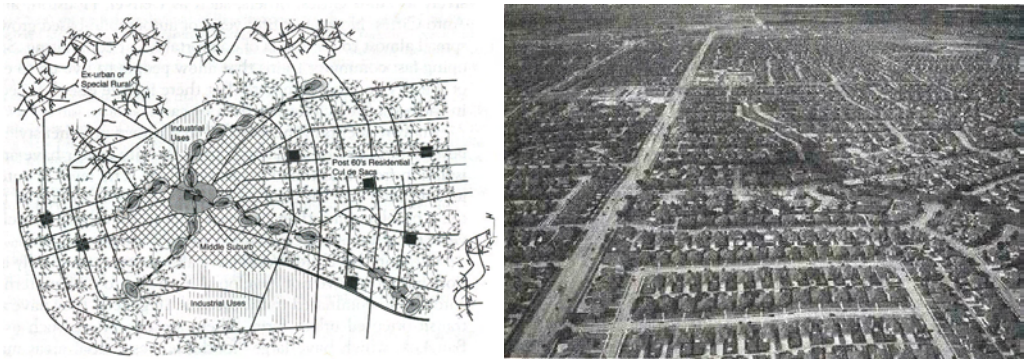


Figure 3.6: Conceptual schema of sprawled automobile city (source: Newman et al., 1999: 31).

The emerging pattern could not survive for a long period. In the years, after the 1930s, Western urbanization was characterized by initial stage of automobile dependency, whatever they have been previously developed on mass transit infrastructure or not. Specificity of automobile was enabling people for being mobilized in all direction, free from a fixed route. Therefore, the final product of the decreasing distance decay-effect of motor age became a massive dispersion of urban fabric. Automobile, itself, became a centrifugal force for further urbanization. The 'suburbanization' process realized itself with a 'non-urban' space organization, based on low-density low-rise urbanism, without any prevailing emphasize on public space. A vast amount of vacant land in the periphery of cities turned into development sites. Freeway suburbs in urban sprawl substitute streetcar suburbs. Since walking distance requirement in transit settlements was a factor on high land prices within a compact urban form, after involvement of automobile, land prizes significantly decreased. This was the prominent dynamic of urban form, which lost its legible boundaries at the edge. Another drive behind the lost of the compactness of urban fabric was the size of building lots. While plot sizes increased, overall residential densities were decreased proportionally (Risse, 1992: 2; Bernick et al., 15-32).

Mainly, decompaction process of the cities were subsidizing by central policies. For example, in the U.S., Federal Government promoted out-movement from the cities by the construction of federally financed metropolitan freeway systems. Creation of horizontal cities was adopted by the widespread

program of suburbanization through the process of urban sprawl as the most extreme version of extensified urbanization (Hall, 1990: 290-91). In those years, L. Mumford defines mass suburbia in America as *anti-city*:

"…We are faced by carious paradox: the new suburban form has now produced an anti-urban pattern. With the destruction of walking distances has gone the destruction of walking as a normal means of human circulation: the motor car has made it unsafe and the extension of suburb has made it impossible." (Mumford, 1961: 506)

Contrarily, controlling suburban growth in Europe became much more effective on the dissolution process of large cities. In the countries like Britain, Germany and the Netherlands, local planning authorities have been successful to contain and keep suburban growths relatively compact around cities. Nationalization of the land to be developed and employing green-belt restrictions became major policies, there (Hall: 304-05). On the other had, such a disurbanization process inevitably produced a 'leapfrogging' pattern of urban development, which is a counter-model of continental compact city.

Auto-dependant urban way of life is currently dominant and hegemonic form of urbanization in many countries like the U.S., Australia and Canada, Japan, even today. It is still main actor of horizontally growing, low dense, space-consumption-based and non-compact urban development pattern (Sudjic, 1992: 247-57). In the urban regions of the U.S., population densities have continued to decline since the 1950s. In most cities, the share of public transit has declined drastically. And it seems that reversing this trend would be very difficult. If this is the case, any probable transportation-land use link suggesting that more compactness is very difficult (Richardson et al., 2000: 2).

Although the most of the Third World cities have grown dramatically after the post-1940s, they have not developed in automobile-oriented urban pattern. In general, common form of development have been based on a more transit and walking-oriented pattern.

The last phase of development is still in dispute for many. Formation of new production techniques, modes and factors are still in progress and their realization concentrates in a certain part of the world. The 'part' refers here developed, highly urbanized societies, which are in a dynamic transformation through information-based technologies. Even being speculative, starting from the clues of present process, there are some argumentations and visions on urban form in the late 20th and early the 21st Century.

3.2 Future of Urban Compactness

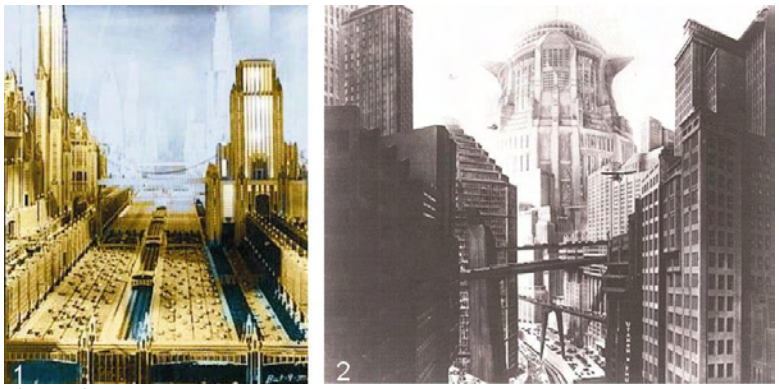


Figure 3.7: Early cinematic representations of future urban form, *Just Imagine*-1930 by D.Butler (1) and *Metropolis*-1926 by F. Lang (2) (Source: http://membres.lycos.fr/starmars/just.html, http://www.geocities.com/Area51/5555/metrop3m.jpg

Most of the futuristic urban images in the beginning of the century were characterized by high-rise, high-density urban space structures. Such a vision was strengthened by the emerging development in the construction techniques -fireproofed steel fames and elevator systems- of high-rise buildings, which were erected in the 1870s in American metropolises (Kostof, 1991: 323). Since it was assumed that the future of human civilization would be realized on technological development, the final product of technology in urban space is supposed to be in the form of technically strengthen vertical development, for the years. By the futurist cinematic studies in the late 1920s and the 1930s, such a spatial representations on the city of future appears as figurative forms. Whether in disutopian or utopian point of view, almost all urban images, designed by early science fictions, depicts vertically compact and high-density city with tightly clustered and well-integrated high-rise constructions. They are typically enclosed, overcrowded and dense (Gold et al., 1997: 61). Such compactness means a loss of direct contact with the soil and natural land, which is characterized by the so called 'asphalt culture' (McArthur, 1997: 37). Those were extremely different from prevailing urban visions in the beginning of nineteenth century, which were mostly based on assimilation of urban environment within nature.

Within the beginning of the 21st Century, it is questionable whether this vision would be valid in today's urban context. With respect to changing mode of thinking, such a certainty on the future of urban form does not seem to be valid for contemporary urban visions. Increasing complexity and multi-dimensional dynamism of present urbanization process does not allow any kind of a deterministic idealization. In spite of that, urban intellectuals still produce a series of arguments on the issue of urban form in future. Although some of them are relatively speculative.

Like early futuristic urban visions, current prospects on future urbanization put technological development paradigms foreground as a major determinant factor. In this circumstance, information

technology and communication systems inevitably come to agenda. Like railways, shaped urban regions in industrial era, fiber-optic and telecommunication networks tend to shape cities today. In the era of the search for the answer to such a question, whatever *computers for cities or cities for computers,* urban societies seem to face two alternative development patterns spatially: Limitless urban expansion and dispersion or concentration in more compact urban forms. This is the main division point between diverse thoughts on the issue, today.

In other side of the discussion, many think that the diffusion of information technology is likely to predominate long-standing spatial pattern of cities through reinforced urban deconcentration. To those, long-term trends in (re)structuring process of economic sectors show themselves in favor of decentralized patterns. This will be experienced by means of emerging information infrastructure, which enables separate businesses to conduct at far distances in space. Definitely, thanks to the telecommunication technology, firms and institutions can locate anywhere free from early technical restrictions, which made them keep close together. That's why, apart from the construction costs, more or less fixed anywhere in urban land, the cost of land becomes the main factor for location choices (Gillham, 2002: 240). In that case, peripheral locations of cities like exurban areas gain advantage with their relatively low level land prices. Naturally, that type of condition signals to deconcentration trend in urban areas, currently.

Centrifugal affect of new telecommunication technologies on settlement patterns makes spatial proximity concerns irrelevant. Accordingly, peripheral workplaces are growing faster in western cities. Under these conditions, popular acceptances on urban future are in favour of decentralization: *"today's cities continue to become less compact and the future will be anything but compact."* Present trend on location preferences becomes more affective when information-processing capability of technologies is being improved by global competition (Gordon et al., 1997: 100).

Such a perception of information technology and its original role in urban space can be traced from Weber's early writings on urban place. In the late 1960s emerging institutional and technological changes appeared as a transformative tool for social relations in space. In this context, Weber claimed that the changing pattern of communication would transform overall spatial structures in a dramatic way. To him communication technology is likely to create communities without closeness and proximity. This will be practiced with dispersion of people, who only need telecommute, in 'non-place urban realms'. Then, people would be less tied to 'place' (Weber, 1968). Increasing mobility pattern and greater distanced urbanities were supporting Weber's argument.

Another strong argumentation for decentralization, after about ten years, came from A. Toffler, American futurist. To him, early human development had been experienced in two phases of society: agricultural and industrial. While in the first phase, agriculture had introduced spatially intensive existence within dispersed villages, industrialism introduced a great concentration with regards to energy, population, work, education, and economic-political organizations (Toffler, 1990: 52-53). In

second one, crammed populations were compressed in cities as tightly packed nodes. In contrast, by *third wave*, it is asserted that new spatial experiences would replace conventional ones, in the name of great decentralization. By means of high technology, electronic cottages would generate home-based societies. By performing employees at home, there would no need for any central organizations, large office complexes or concentrated amounts of energy for a new dissolved settlement pattern (Toffler, 1990: 204, 298). Although Toffler envisions that with decentralization, fossil fuel-based energy pattern would be convert into smaller scaled alternative energy system. Yet, all enduring decentralization process in western world has no significant signals through such a transformation. It depends on much more ruling dynamics of global economy-politics today.

On the other hand, changing activity patterns of urban societies contributes the claims of decentralization. Developing technologies make communities atomized within individual spaces and create new kinds of compactnesses at virtual version of communication milieus, like Internet. Technological advances such as online shopping, education and entertainment diminishes spending time in urban space for modern urban societies. Since more leisure activities are realized by means of personal computers at home, home based working -virtual working- is becoming common for service sector day by day (Mitchell, 1996). Actually, it is another dispersion factor for businesses, which do not need to be spatially closed to labor market anymore.

On the opposite side of the argument, there are thinkers who assert that the current economic and social conditions will support urban compactness in future. The main logic of the thought is that there wills always a significant demand for compact, walkable communities, regarding the nature of human relationships. Hence, face-to-face relationship patterns do not seem to be displaced by any other communication patterns -like those in cyberspace or virtual environments-. Gottman argues that urban settlements will not dissolve under the impact of technology even they are evolving presently. For transactional urban activities cause a concentration in urban places. In steps forward, first it will happen in large urban centers and then in great number of smaller centers with a spatial character (Gottman, 1983: 28 cited in Gillespie, 1992: 71). When we consider world cities, which are centers of information and communication-based activities, we perceive that they remain inherently nodal. Certainly, it is just because of advanced technological services, which need to be supported by advanced urban infrastructure. Therefore, to depict information network, it is more appropriate to use the term of ‘electronic railway’ referring place-specific access to network, rather than ‘electronic highway’ which does not necessitate any emphasize on ‘nodality’ (Gillespie, 2000: 72).

A complementary argument in compactionist point of view is about the reproduction form of information. Economical shifts in the last forty years in the developed countries has loosen the need for separating different modes of activities in urban space. Complex, multifaceted urban spaces bring people together in different ways, creating a degree of interaction and synergy. This process is in favor of facilitating more diversified urban spaces (Hofius, 2000). To Kotkin, cities -can be read as urban space- will be still mattered in future by maintaining their role as the centers of information and

commerce. Hence, the most efficient accesses to privileged information are still realized in personal networking in the 'real' space of urban settings. This assumption inevitably refers compact space structure to harmonize the most efficient mode in both urban and architectural level (Kotkin, 2000). When we think on working patterns of knowledge-based innovative sectors like various design industries -where engineers, scientists or system analysts concentrates-, it seems that teamwork and close-proximity to one another is an essential component in innovation. Businesses, which integrate IT-based production processes, still need to interact sub-sectors to complement their skill in a synergic atmosphere. Professions that overlap another's interest currently tend to cluster into nodes. Then, residential additions and services occur in these nodes. Such nodes create their own compact 'local milieu' based on dominant kind of industry, such as biotechnology or micro-technology. Integration of design, production and marketing in different sectors currently support this envisage (Freeman, 1988: 53; Newman et al., 1999: 36). All can be considered as positive factor in favor of urban compaction with regard to the proximity requirements, even in future. Yet, the transformations, quoted above, cannot be generalized through all urbanities around the world, because of the limited influence area of technological development, geographically, even though it's spreading rapidly.

There is no doubt that urban decentralization process -centrifugal movement- is a reality and for the most of developing and developed countries, it gives an impression to be lasted in near future. The main point here is in what form this trend is to be constructed: In concentric -concentrated decentralization-, dense, integrated and compact form or contrary in dispersed, loose, and scattered urban form. Those fundamental alternatives are the urban conditions -like communality of societies-, urban-rural relationship, patterns of energy use or mobility patterns.

Today, the dominant discourse of 'space of flows', which is time-sensitive development rather than distance sensitive 'space of places", represents a counter argument for urban compaction. The physical urban image, depicted here, is fragmented, fast dispersing and peripheral outward growth. Extreme form of urban development schema based on information technology –IT- can be illustrated as 'urban civilization without cities'. It is because of that; the communication improvements accelerate the process of spreading of cities beyond their functional boundaries and may result in dissolve of core-oriented cities as the representation of conventional urban civilization (Gillespie, 1992: 68).

Yet, such future development form has also contains its contradiction within itself. The prominent claim is the substitution of surface travel by decentralization of everyday activities to living spaces by communication technologies. To one extend, energy consuming settlement forms in today's would be replaced by energy conserving substitutions of physical mobility patterns of goods and services, such as telecommuting, tele-shopping, electronic data exchange etc. (Gillespie, 1992). On the other hand, evidences indicate that telecommunications promote more surface and air-travel with scattered long-distance businesses and personal encounters. Advanced logistics on electronic communication make 'just-in-time- delivery systems much more frequent. It also means the condition of more movement-

intensive form of urban activity pattern. In progress, inevitable result would be raising of the level of traffic congestions and overloaded transportation facilities in urban regions in near future (Audirac, 2002: 1-5).

Unsustainable travel pattern in urban areas is the main problematic, which brings urban compactness to contemporary urban agenda, today. Beyond speculative point of views, urban compactness has a potential to serve as a development model for the next generation of urbanization.

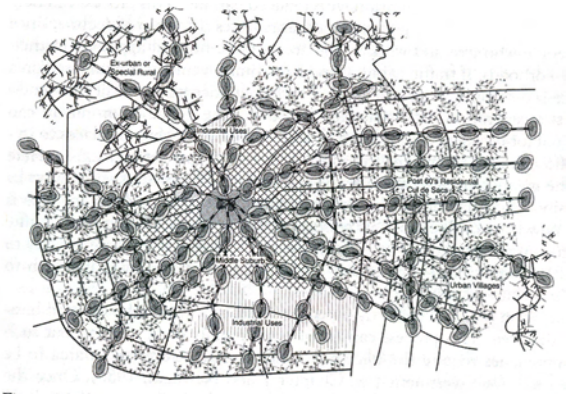


Figure 3.8: Conceptual schema of the "Future" Nodal/Information City
(Source: Newman et al., 1999: 185)

Newman and Kenworthy argue that information age does not necessarily support dispersal and auto-dependant urban development pattern. Before reaching such a conclusion, they identify industrial and information age by referring the main spatial characteristics of the economies:

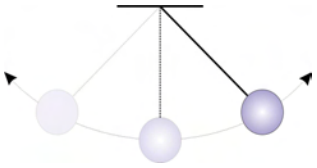
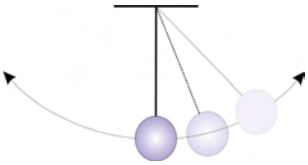
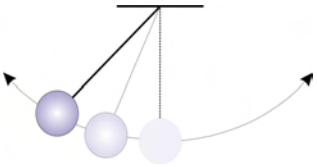
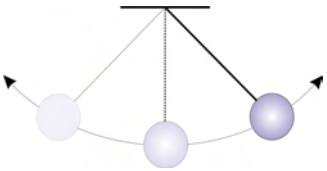
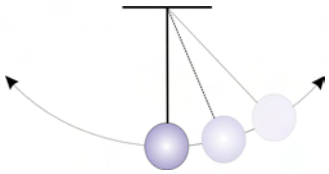
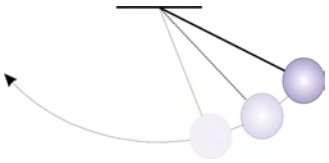
- Industrial Age (Manufacturing Economy)
  - Zoned monocultures of urban development (Industrial land, CBD, separated residential areas)
  - Dispersed and zoned residential patterns

- Information Age (Service Economy)
  - Mixed-use development (home-based business, mixed-use town centers, integrated employment areas)
  - Residential areas near to mixed-use town centers (Newman et al., 1999: 178).

To them, service economies suggest a structural compact settlement schema in the information age. Since urban future functionally leads to 'multi-nodal cities', where each node is mixed-use, the segregation of urban activities, as counter argument of compactionist space will be invalid. Development nodes are made up human-based centers connected by transit systems. In this urban

system, walking and cycling (local), transit (city-wide) and air (global) are dynamic connectors of local communities, which are globally linked (Newman, 2000: 115). Such a future image is applicable to whole urban fabric even in sub-regional level. Yet, the problematic of uneven development trend of IT-based urban development pattern is unclear. Hence, it is a fact that all urban areas cannot meet the development costs of IT infrastructure today.

Table 3.2: Principal concentration patterns in historical/future periods of human society.

	Intensive Spatiality • Concentrated • Intense • Compact	***Urban Pendulum***	**Extensive Spatiality** • Deconcentrated • Scattered • Dispersed
Nomadic Societies			
Agrarian Societies			
Industrial Societies			
Post-Industrial Societies			
Informational Societies	 Scenario I: *Concentrated Decentralization*		 Scenario II: *Super-dispersion*

After a generic reading of urban history and futuristic arguments on urbanization, we can construct a scheme, which combines distinct periods of urbanization within a framework of urban concentration and compactness. In this scheme, we can imagine an abstract pendulum, which oscillates between two poles continuously: extensive and intensive spatialities. Here, while the first one is futured by

deconcentrated, dispersed and scattered settlement modes spatially and geographically, concentrated, intense and compact forms characterize the second one. When pendulum is located in between two poles, it refers spatially restricted but geographically dispersed settlement patterns. In another word, *concentrated decentralization* in popular term.

For the fifth phase of development, we cannot present one unique phase of the motion. It is rather preferred to give two alternatives, based on current argumentations, quoted above. It is because of the fact that current dynamics and trends are so contextual and temporary. Therefore, it is difficult to embody an overall conceptualization on the future of urban compactness even in a speculative form.

CHAPTER 4

IDEOLOGY OF URBAN COMPACTNESS: *HISTORICAL VIEWS ON URBAN COMPACTION IN TERMS OF THE ANTAGONISM BETWEEN CENTRALIZATION & DISPERSION*

In this chapter a classification of the major schools of planning and design is made with reference to the ideological antagonism between centrism and decentrism. This categorization includes both the specific personalities and the groups belonging to a particular worldview in the history of modern urbanism.

Search for an ideal city is a prominent effort of social engineering. Fishman takes utopian thought into consideration by dividing it into two perspectives: the tradition of Saint-Simonian and Fourier. While, the first one stands on an industrial hierarchy, an urban and technological thought, the second one represents rural, small-scaled, self-sufficient society. (Fishman, 1989: 234) From the time when two fundamental standpoints had emerged, all urban visions either categorically belonged one or tried to compromise between two: centrism and decentrism.

If we re-conceptualize idealized modern urban form schemas based on the diversification between centrism and de-centrism, two basic models come up: suburban model and urbanist model. Each model creates its own needs and demands, which are the production of specific socio-economic and cultural background. (see: Table 4.1) This differentiation also represents fundamental value-based characteristics of human settlements.

Table 4.1: Basic characteristics of suburban and urban mode of built environment. (Source: Ravetz, 2000: 222)

	Sub-urban model	***Urban model***
Needs, demands & conflicts in location aspects of human settlements at any scale	o Private territory o Local amenity o Garden environment o Car access	o Communal space o Local jobs and services o Urban environment o Public transport

We do not symbolize sub-urban model as solely a physical situation, rather as a life style. It is possible to identify suburban phenomenon as the prototype of residential communities beyond existing cities in periphery. They are definitely in low-density parklike settings to ensure family

privacy and homogenous enough to enhance class-segregated community (Fishman, 1987: 5-8). By definition, it is already in conflict with urban mode of life.

We can infer from the schema that any advocacy for centralization of urban space is positioned in the side of 'urbanist' standpoint. By the term of *urbanism* we refer an ideological stance, which cares 'urban' as both a social and especially a physical phenomenon. It creates its own set of values. The concept of urban is generally subject to sociological outlook. In this sense, the spatial terms like concentration and densification may not be thought irrelevant while referring to 'urban' and 'urbanism'. When we compare large, denser and concentrated settlements with smaller and scatter ones, we can easily perceive the social differences with respect to heterogeneity, low-level segregation, variation and vitality in support of the first one, in social context. Therefore, starting from the physical context and then reaching social and political ones would be beneficial to define urbanist ideology.

In this sense, Wirth's definition of urbanity can serve a framework for our classification of space and spatial approaches in relation. While reckoning urbanism as a mode of social life, Wirth makes a clear distinction between city vs. country and urban-industrial vs. rural-folk society. In this kind of a categorization, he characterizes 'urban' with the experiment of living in large, dense and socially diverse environment. To him, intensification is a social progress and density strengthens the diversification of social groups and their activity pattern. That results in a complexity of the social structure (Wirth, 1996.). In this framework, we can unconditionally recognize centralist ideology supporting density, intensity and concentration as an advocacy of urbanism.

In modern planning history although there is not a declared polarization based on centrism and decentrism, it is not meaningless to re-evaluate the history with this pre-defined framework. Such an approach would make us perceive the elements of the oppositions between unlike urban ideologies and the urban images whatever realized or remained fictional.

Sudjic considers this theoretical and/or practical opposition founded on the antagonism between decentrism and centrism, as dividing line of modern urbanism:

> *"Urban theorists with an architectural bias have put many glosses on their strategies for shaping the city, but there are two fundamental and sharply opposed recurring themes in their models: the high-density city set against the decentralised low-density city. At one extreme are those who want to see existing urban densities maintained or even intensified, and at the other are decentralists. Both sides blame each other for all the perceived ills of the modern city"* (Sudjic, 1992: 11).

This opposition is basically derived from these paradoxes:

- center versus periphery

- urban versus rural
- intensity versus dispersion.

While mentioning such a polarization between two models, we use the term, urbanism with equivalent meaning of centrism. It is important that by using the term 'Disurbanism' we do not tent to judge it and to corroborate urbanism. It is certain that most of decentralist ideas in history can be considered as progressist ones within their real-conditions and original context.

Anti-urban philosophies, which had always been dominated in modern planning ideology, have been fed by certain attributes:

- The single freestanding house on its own plot, called to mind as *good urban life*.
- Emphasis on separation of urban activities in order to avoid *conflict*s. (mono-functionality) (Dewar, 2000: 210).

In this framework, disurbanist ideology has generally been established on the 'cult of domesticity' in general term. Especially in post-war era, decentralization lost its reformist/utopist essence in the late industrial era and became a spatial strategy of market mechanism with its non-progressist value-system, like uniform, dull, conformist lives and socially homogenous suburbanity. –R. Fishman calls that phenomenon as 'Bourgeois Utopia' (Fishman, 1987). In contrast; urbanism is a counter-argument against *individualist suburban consumptionism,* which is promoted by the post-war modernization in Western countries.

As a contribution, Lang classifies two camps as *the Anglo-Americans* (decentralists) and *the Continentals* (centralists). While, *decentralist empiricists* present small-town community and rustic setting of medieval city as their values, *rationalist centralists* imagine an airy, sunny, technological and socialist metropolis as the model of urban future (Lang, 1994: 6). In any framework of definition, the critical tension between centrism and urban thought can be seen as the main dynamic of history of modern urban theory.

4.1 Centrists: Urban Concentration and Control of Nature

4.1.1 Modernist Urbanism: *Le Corbusier (1929)*

Despite widely being accepted as an 'anti-urbanist' within contemporary definition of urbanism -formerly based on intensity and diversity principles-, planning ideology of Le Corbusier represents a radical version of centrist urbanism. As the leader of modernist architecture and planning, Le Corbusier perceives cities as dynamics of so-called modern machine ages and as counter condition of

the countryside. Thus, he does not address the decentralization of cities but concentration of them. To him, *everything is concentration, nothing is dispersed* (Le Corbusier, 1967: 136).

Le Corbusier legitimizes its centrist point of view by putting forward two fundamental alternatives for modern urbanization: *"1. Agglomerations made of garden-cities, causing dispersion of their inhabitants over a sprawling area, 2. Concentrated cities, built vertically gathering inhabitants in a joint social phenomenon and cutting the area of the city to a minimum."* (Le Corbusier, 1967). As an urbanist, he prefers the second one. Because, he claims that garden city leads individualism. It destructs social spirit and the collective will, materially: *"... Whereas urban concentration favors the introduction of communal services. A mirage: decentralization, lowering population density to 300, even 150 inhabitants per hectare, with the pretext of giving of the countryside back to the city man. Sheer illusion and falsehood, as the reality shows*." (Le Corbusier, 1967).

Le Corbusier's ideological stance was clarified in the 1930s when presenting his influential book, *The Radiant City (La Ville Radieuse*, 1933). In this work collection, it is seen that Le Corbusier's centrism is not only toward existing central cities -such as *Plan Voisin* for Paris-, but also towards new high-rise cities in open countryside -like Nemours Plan-1934- (Le Corbusier, 1967).

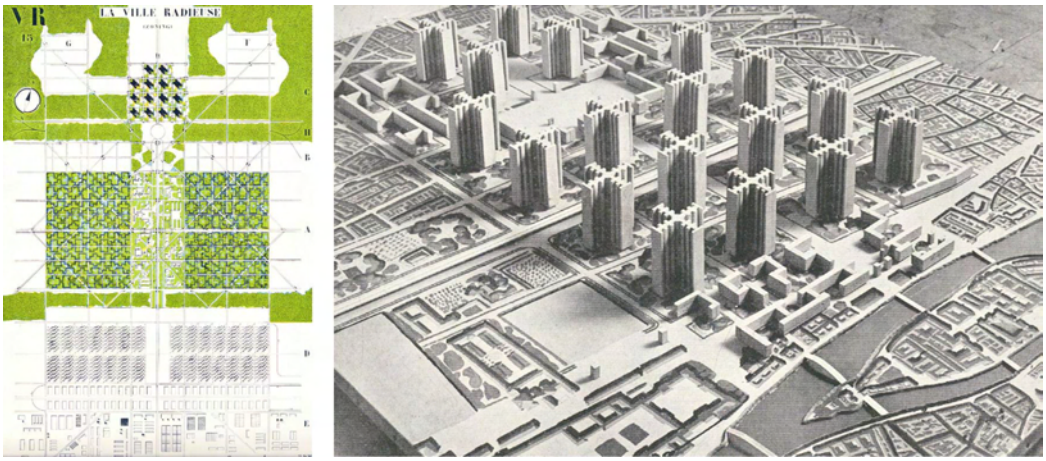


Figure 4.1 Plan of *The Radiant City -La Ville radieuse*-1930 and the aerial view of the model of *Voisin Plan*- 1922: Symbols of modernist high-density urbanism. (Source: Le Corbusier, 1967: 170, 207)

With centralist urban plans, Le Corbusier envisions formally compact and concentrated urban environments. 'Formal compactness', here, directly refers density measure, but not diversity. Mono-functional segregation by zoning characterized Le Corbusier's plan schemas, like those of all modernist ones. On the other hand, density figure is extremely utilized in Le Corbusier's design strategies. This strategy is the product of a space maker objective. Although, there is a famous paradox in Le Corbusier's assertion: 'we should increase density to decongest the center of the cities'

(Hall: 1990: 58). The paradox becomes the motivation for a new style of urban centrism: Modernist high-rise urbanism.

To Le Corbusier, increasing the density of the population of a city would result in less area to be covered. The aim is increase open space ratio in overall. By encouraging vertical densification, the ground is assumed to free for greenery and circulation. Thus, verticality is not an aesthetic consideration for Le Corbusier, rather it is a tool to diminish the coverage of built-up areas. It is ensured by tower blocks –called as *Unités*-, each is capable of housing 10.000 to 50.000 inhabitants. His density items are almost ten times greater then those of existing metropolitan cities, in the 1930s. For Contemporary City, his density proposals are 3000 people per hectare in business district and 300 people per hectare for residential area. (Le Corbusier, 1996: 339-41) Another instrumental reason of high-rise urbanism was presented as defensive precaution against air wars, shortly after the world war (Le Corbusier, 1967: 60-61).

Le Corbusier puts massive car ownership at the heart of his plan for a 'Radiant City'. Instead of sprawling cities, he prefers towering high-rise geometric blocks, which are located in open space and crossed by great highways. The rationales behind two mode of space structure are similar: to give full efficiency to auto-based mobility in motor age.

Different from urban sprawl, modernist-centralist design paradigm searches for creation of urban green as public space –but not a 'place'-. Thus, the modernist motto of 'put the ground to use' should not be regarded solely for the benefits of people, but also for automobiles. This is one of the most criticized points of modernist urbanism, today. On the other hand, one of the great contributions of modernist space theory to contemporary planning practice is that concentration does not necessarily mean congestion and crowding. It is entirely a design problem to imply concentration without crowding in space.

Another critique, directed to modernist urbanism is its functional segregation, which diminishes diversified vitality of urban space. Hence, over simplification of urban structure by a strict functional order is a negative factor for the complexity of urbanity, however it requires a fine-grained social and spatial structure.

Centrality and concentration in space is harmonious with modernist politics of the centralization of society. Since, modernism calls for a controllable social order, its physical model certainly becomes physical centrality. Modernist political perspective tries to master the city by means of intensifying urban elements within a central organization rather dispersing them. Thus, the desired social coordination can be ensured, efficiently. Because of finding its root in Saint-Simonian utopian tradition historically, it can be claimed that modernist centrism represents the most reformist standpoint within centrist planning approaches.

4.1.2 Critical Urbanism*: Jane Jacobs (1961) & Richard. Sennett (1970)*

In the urbanist camp, position of J. Jacobs and R. Sennett is quite different from the others. Their urbanist perspective does not originate from any centrist model presented by them, rather it derives from an ideological advocacy of urbanity by criticizing disurbanist planning policies (*orthodox city planning* in her words) and the intensions behind them.

To Jacobs, cities need an *ordered chaos*. This means elimination of over-controlled planning regulations, which does not permit diversifications spatially, functionally and socially. For her, diversity essentially differs urban space from sub-urban and rural settings. In the introduction of her cult study, *The Death and Life of Great American Cities,* she decisively declares her centrist viewpoint: *"..to be frank, I like dense cities best and care about them most."* (Jacobs, 1961: 16).

Her opposition to decentrism is because of the inevitable end point of decentralization, which is the elimination of urban diversity. For her, concentration is a generator of diversity. Hence, people can come closer and many different tastes, skills, needs and supplies can be reproduced among them in the name of urbanity. Such an urban condition does not only crate an opportunity for economic development but also a cultural dynamism in cities (Jacobs, 1961: 144-151).

Jacobs directs his criticism mainly to E. Howard by assuming him as classic decentrists. For her, *"…Howard set spinning powerful and city destroying ideas. …He was uninterested in then aspects of the city, which could not be abstracted to serve his utopia. …Howard made sense in his own terms but non in terms of city planning. Yet virtually all city planning has been adapted from, and embroidered on this silly substance."* Adoption of Howard's ideas in America during the 1920s is hold responsible for American urban theorists, from L. Mumford to P. Geddes by Jacobs. Since then, in America, prevailing decentrist ideas had been devised for *undermining* and *killing* great cities' life and economies (Jacobs, 1961: 18-21).

Apart from decentrist 'enemies', some centrists also take their share from Jacobs' critique. From them, the prominent one is Le Corbusier, who is also classified in urbanist positioning in our study. Jacobs disapprove of Le Corbusier for imposing mono-functional, authoritarian solutions devastating urban diversity and grain, which was historically developed. *"No matter how vulgarized or clumsy the design, how dreary and useless the open space, how dull the close-up view, an imitation of Le Corbusier shouts "Look what I made!" Like a great visible ego it tells of someone's achievement. But as to how the city works, it tells, like the Garden City, nothing but lies."* (Jacobs, 1961: 23). For her, modernist urban surgeons directed to central cities were ended up with the loss of the richness of urban life.

About density measure, Jacobs is so clear and persuasive. In her formulation, urban vitality starts from the net density of 250 du/ha. Since, it allows a large variety of housing forms in a fine grain. Importantly, ground coverage is the fundamental factor for centrist design solutions. In that sense, buildings should cover 60 to 70 percent of urban land. Remaining should be left to small courts and yards as semi-private space. Advantage of such an intensified space is its positive affect on people to use public spaces. Then again, Jacobs does not see density as a sole factor for an ideal urban space. She believed that acceptable densities can be achieved by certain criteria referring physical character of space: small blocks making frequent street, varied type of buildings, and integration of aged buildings in fine-grain urban layout (Jacobs, 1961: 178-221).

To Jacobs, equity between overcrowding and high-density is an *unreasoning dogma inherited from Garden City planning*. Since overcrowding is identified as the people per dwelling or a room, it can also possibly emerge in low-density areas. By, giving real examples, she proves that such a condition is much more undesirable in urban life (Jacobs, 1961: 205-209).

Theoretical influence of Jacobs is not deniable. In today's popular trend is towards relatively high-density, fine-grain, mixed-use developments. Jacobs' urbanist call for concentrated, diversified urban spaces has been widely understood as a vital principle for contemporary design and planning approaches. Interestingly, while the principle advocated by Jacobs was a desire for an anti-planning strategy in years, those principles are being tried to be activated by certain planning processes today. Differently, those of today are in centrist point of view.

As another protagonist of *critical urbanism,* R. Sennett is maybe the most politically radical and controversial urbanist today. Even being a sociologist, Sennett aims to transform his ideas on the life in the city with practical advices for architects and urban planners. Although Sennett takes the city as a political phenomenon, he reconsiders it as a physical setting.

What Sennett understands from the urbanity involves a set of themes: *difference, diversity, density, strangers, mixture of people, complexity, unlikeness and impersonality* (Grönlund: 1997). Within a significant similarity with the conceptions of Jacobs, Sennett advances the advocacy of centrism. By doing that, he starts from social idealization and achieves spatial one. Even though he is an anarchist, Sennett is not compatible with anarchist disurbanism. Since the spatial end-point that he addresses is completely different from the anarchist version of disurbanism.

Politically, Sennett promotes mixing of people from different classes, different ethnic backgrounds and cultures - strangers, foreigners, and immigrants-. They should be in close contact to create a state of community, which is *conflict-free*. It is compatible with his anarchist worldview. After all, multiculturalism and unlikeness among people can be ensured in everyday life. Here, a positive connotation is assigned to the situation of confrontation and conflict. They are conceived as the dynamism of social progress creating communal tensions and represent a dynamic antagonism.

Basically, it is the counter argument against the 'myth of purity' produced by modern metropolitan planning in isolated suburbs, with a disurbanist view angle (Sennett, 1996).

To guarantee an urban condition supporting politically decentralized disorder, an urbanist mode of thinking is required. Since socio-political requirement declared by Sennett is possible through the built density, physical settings should be principally dense and tight-packed. Housing, manufacturing, services, shopping and consumption, pleasure and politics also have a dense overlay on urban surface. As a result, in a prototype of dense compressed space, people tend to deal with the other identities who are unlike themselves (Sennett, 1996). To Sennett, *"The structural conditions under which survival communities could work are first those of heavy population density and second those of multiple contact points. Both of these structure are brought to a high point in urban settlements"* (Sennett, 1996: 151).

According to Sennett, postwar era has created less dense and dispersed settlements and belonging *mass-culture society*. Thus, the model of *dense city society* symbolizes the counter-culture against post-war trend, today (Sennett, 1996).

Different from Jacobs, Sennett fails in giving concrete directions to planners and designers, to whom he directly addresses. Even in his tribute study, Sennett does not go beyond abstract expressions about policy directions: *"…To permit space to become thus encoded with time, the urbanist has to design weak bounders rather than strong walls."* (Sennett, 1990: 196). Here, the terminology is far away from any operational indication for designers. On the other hand Sennett's importance for centrist perspective results from his political contribution to urbanist perspective. He gives an original meaning to dense/diverse type of urban space in the advocacy of contemporary urbanist ideology. Additionally he has brought anarchist thought from its historical disurbanist roots -symbolized by P. Kropotkin- to the centrist stance.

4.1.3 Neo-Traditionalist Urbanism: *Leon Krier (1984), Andres Duany & Elizabeth Plater-Zyberk (1991)*

European architect L. Krier illustrates major features of the traditional western city: Being compact and their formally ordered closeness of residential, commercial, civic, religious, and recreational uses, The motivation of neo-traditionalist approach is the traditional western urbanity which is typically intense, not more expansive than about a half-mile and within ten minute-walking distance. The street network of the city is fronted and defined spatially by buildings placed close to the street and square. This is also basic design objective of neo-traditionalist urbanism (Krier, 1980: 40-48).

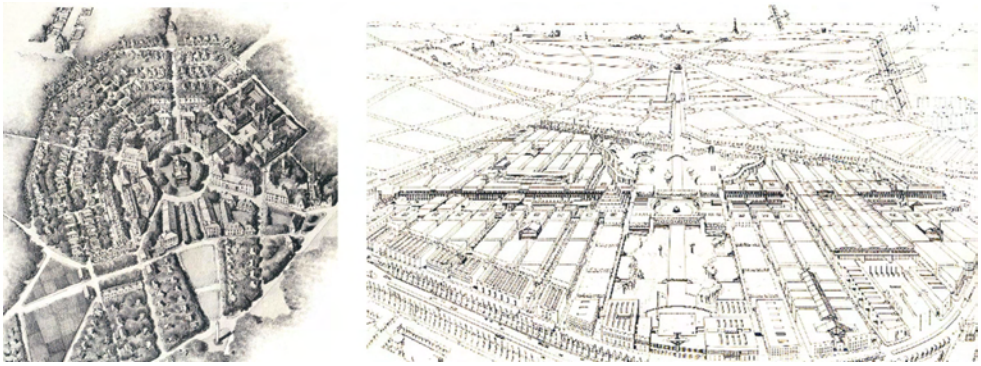


Figure 4.2: Neo-traditional designs by Duany & Plater-Zyberk (1) and Krier (2) (Source: Duany et al., 1991: 27, Krier, 1980: 74)

Starting point of neo-traditionalist urbanism is the critique of modern urbanization producing suburban societies. To Krier, *"The city always defines its limits, it distinguishes urban space from rural land. On the contrary, suburban sprawl aggresses both city and countryside and proclaims to the world: What is yours will be mine."* (Krier, 1984: 20). In opposition of the dissolution of city in a spatial continuum, any project of reconstruction should take city and countryside as antithetical notions. Accordingly, it should be arranged in a strict physical and legal separation of city and countryside (Krier, 1980: 30). Krier's urbanist position does not admire metropolitan developments. Instead, he idealized 'the city' in between the *tyranny* of the village and metropolis (Krier, 1984: 104).

For Krier, a city can die by an abnormal expansion, density and dispersion. Contrarily, he envisions an urban prototype, which has a center and well-defined, readable limit. Then he identifies the city by *quarters.* Here, the term of quarter refers to the part of a compact whole. In that idealization, a city have maximum four urban quarters. Each quarter integrates all daily functions within a territory not exceeding 35 hectares. In the quarters, no functional zoning is allowed. To him, a federation of quarters would reduce the area of urban territory, in overall (Krier, 1984: 70-71).

Another leading representatives of neo-traditionalist centrism are A. Duany and E. Plater-Zyberk, the American architects. To them, community, civic place and neighborhood are the traditional concepts, which should be defended against continuing dispersal of urban functions. Therefore, they opposed both the overgrowth of the older city and the unplanned suburban sprawl. Their opposition derives from the reason that both development modes cause the loss of the design control to of build environmentally sounded and more urbanely spaces. They believe that all of structural urban elements should once again be assembled into traditional towns, once again (Krieger, 1991: 9-15). Unlike Krier, Duanys' emphasize is not on the city, but suburban town.

As a result of the reaction against unplanned sprawl, Duany and E. Plater-Zyberk developed regulatory codes as the center of their works. By the codes, they predetermine uses, building types, lot sizes, street frontages, construction materials and landscape (Duany et al., 1991: 96-103). Beyond defining style of design, they ascertain compact nature of urban space, structurally. They employ building types as a zoning tool. They aim to integrate civic gatherings, social and commercial activities by integrating different kinds. Hence, dwelling, shops and workplaces can be in close proximity to each other (Duany et al., 1991: 22). For the *planned communities*, they inspired from traditional American town. It is the small-town heritage, which should be reutilized.

They make use of urban compactness for building traditional enclosed urban space and street. Buildings' size and disposition toward the street designates a space border in a good contour.

They criticize the development policies in the United States of investing too much in 'horizontal infrastructure' -ground for cars- and not sufficiently in ''vertical infrastructure' - buildings for people creating place- To them, the only permanent solution of the traffic problem is to bring housing, shopping, and workplaces into closer proximity in order to develop smarter settlements (Duany et al., 1992).

Duanys' centrist stance can be regarded as much more pragmatic. Rather taking side against suburbanization, their urbanist performance stands at keeping urban peripheral expansions compact. They accept as a given condition and try to revision it. They seek to make suburban development more town-like. It is a piecemeal afford that disregards the anti-urban character of suburbanization at all. On the other hand, even being an 'operation in trench', their contribution to centrist design approach is highly significant.

The importance of neo-traditionalism in the centrist camp comes from their original approach. By determining design criteria of compactionist urbanism, neo-traditionalists direct the viewpoint from principle level to the project based real conditions. On the other hand, their formulations serve for only European and American urban contexts, by its nature.

4.1.4 Visionary Urbanism: *George B. Dantzig & Thomas L. Saaty (1973)*

G. B. Dantzig and T. L. Saaty's model can be considered as the most extreme version of the centrist solutions, which have ever been produced: *Compact City.* According to Dantzig and Saaty, greater urban sprawl, urban pollution, destruction of the countryside and death rates on the highways and inner city decay are the legitimizing factors of alternative type of urban development, which is more compact than existing ones. The main motivation of the authors is energy efficiency. Hence, those are the years when developed countries were in a deep energy crisis and serious critiques toward urban

sprawl emerged. Different from other centrist models, they developed a 'total-system approach' from the budgeting to structure and system design (Dantzig et al., 1973).

Their design approach is based on a combination of vertical and horizontal dimension in a convenient ratio, under a shell structure. They introduce three-dimensional density measure -people per cubic mile- as a new concept of density apart from two-dimensional one-people per square mile-. To the model, 250,000 people are planned to live in a two-mile wide, eight-level cylinder structure, which is flexible to new constructions plugged. The city is surrounded by 25.000 hectares of recreational areas, accessible in ten minutes from any part of it. Besides, top of the structure is leveled to utilize as landscaped recreational park. Inside the structure (city), different urban functions, homes, offices and work centers are located in close contact. Concentric system of the city plan has a unicellular formation. The center of the city, called as *core*, is designated as the zone of offices, warehouses and schools and universities. Other functional areas, *core edge, inner residential area, mid-plaza* and *outer residential area* from inner to outer, are arranged in a concentric ring system. While *the core edge* has a promenade (or mall), *the mid-plaza* provides local facilities (schools, critiques and shops) for adjacent residential areas. Each zone is coded with special plot size, house type and vegetation. They all connected by a series of radials, rings and levels in a compact manner (Dantzig et al., 1973).

Transportation system is based on the principle of the union of vertical and horizontal movement. This is mainly the backbone of compact structure. While ramps, escalators, elevators and stairs are vertical elements; mass-transit, walkways, bikeways and roads are the horizontal constituents of the system. It is also supported by automatic delivery techniques for carriage. By the system, average travel time in the city is 3 minutes and maximum one is 5 minutes (Dantzig et al., 1973).

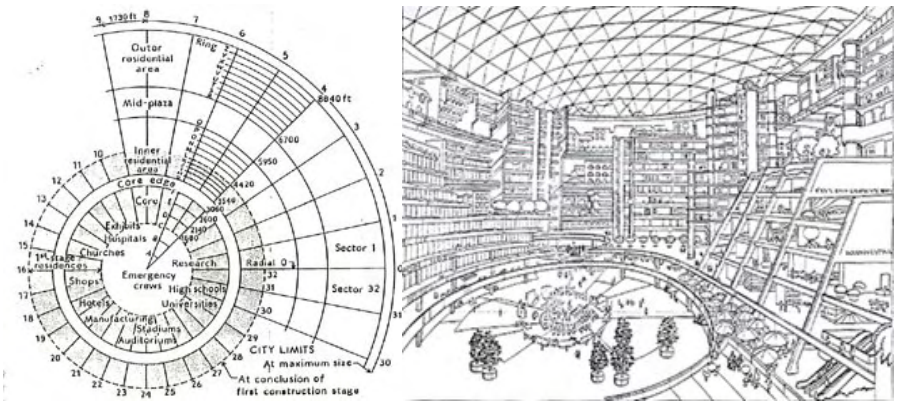


Figure 4.3: Plan for one level in *Compact City* and a cross-section view of the core area of the city. (Source: Dantzig et al., 1973: 43, 64)

Compact City is assumed to be located in more populous areas of the countries to induce people and industries. Major advantages, which are supposed to be provided by *Compact City,* are:

- Possibility for building a modern metropolis in a natural setting.
- Availability of cost saving settlement schema.
- Conservation of use of time with shrinking distances.
- Conservation of the use of land by limited city size.
- Conservation of use of energy by less petroleum dependant transport pattern and combined energy systems.
- Flexible construction techniques to adjust city to changing social needs.
- Efficient urban service system by permission to consolidation and centralization of services.
- Elimination of pollution by recycling, filtering and waste management techniques, which possible in compact urban form (Dantzig et al., 1973).

Culturally, Dantzig and Saaty assert that in *Compact City* society, interaction and local community association is possible for people to participate in a wider variety. That can enhance man's creativity and increase human satisfaction and fulfillment (Dantzig et al., 1973).

With regard to design approach, Dantzig and Saaty do not offer an original contribution to conventional techniques of the organization of urban space. Hence their spatial design approach stands as a reproduction of the one 'outside' within more compact and integrated figure. There is not a new spatial language created. Their typologies of urban space, corridors -roads, elevators etc.- and buildings are similar to 'real ones'. In addition, there is not any inexperienced mobility pattern within new construction. Rather, it is a close combination of the modes used in real cityscapes.

If so, what is the factor makes Dantzig and Saaty's approach visionary? In the context of the design proposal, real trends, popular preferences and prevailing intellectual atmosphere, *Compact City* is a brave new declaration for alternative mode of urban space. Hence, in the early 1970s, sovereign tendency is in favour to extreme urban sprawl in the U.S. In political circle, there is no serious counter-existence and resistance actively. Intellectually, searches for good urban form were not effective enough behind the endeavors of understanding the real complex dynamics, rather changing them. In such an atmosphere, *Compact City* was an extreme opposition to the system producing spatial and social dispersion and it encourages further searches for possible solution. On the other hand, the reason why *Compact City* cannot be regarded as a utopia is the reason that it does not advance a new way of urban life, even in a compact style.

4.1.5 Arcological Urbanism: *Paulo Soleri (1969)*

Dense crowded living in man-made built environment and the natural environment are widely conceived as counter conditions in modern times. Even such a tension is seen as a threat towards nature, Paulo Soleri, Italian architect, envisages it as a staring point to create a challenging urbanity

while preserving the natural assets, which surrounds urban entity. Mainly this is the basic reference point of Soleri's worldview, formulated in the term of *Arcology.* Arcology is the conceptualization of settlement types of Soleri, which symbolizes the synthesis of architecture and ecology. The concept of Arcology proposes a radical urban system with highly integrated and compact three-dimensional space structure. As a counter alternative to sprawl, an arcology engages about two percent as much land as a typical city of same population (Cosanti Foundation, 2004). By means of an urban cell, destructive humanity would be quarantined from sensitive nature. From this point of view, ,t reminds us Le Corbusier's concept of 'machine-age cities'.

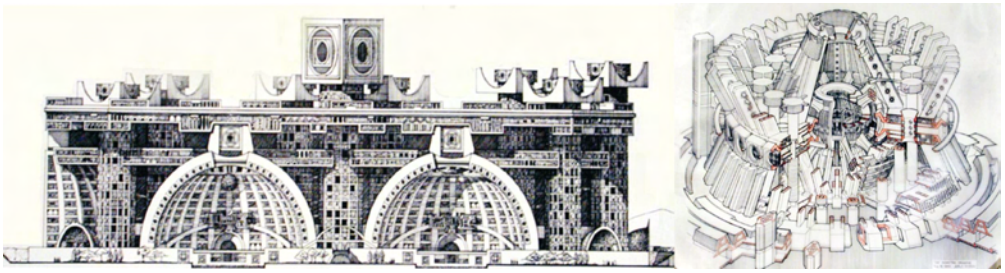


Figure 4.4: Arcosanti (1970)-left- and Mesa City_Ground Villages (1971) by P. Soleri.
(Source: http://www.arcosanti.org/archives/orginaldrawings/arcology/main.html)

Although he worked with F. L. Wright in 1948, paradoxically Arcology is one of the most radical antitheses of Broadacre City. Within Arcology, Soleri defines a new topography, differ from natural one: Multi-level space configuration on one surface, combinations of three-dimensional sub-spaces creating its own climate and focal structure for a city complex life, which is bounded by an organized open landscape. To him, dynamism of society depends on coordination and congruence of information, communication and distribution system. Rapidity and efficiency of the system are inversely proportional to dispersion. Thus, *scattered life is by definition deprived and parasitic* (Soleri, 1996: 454-55). There is a fundamental analogy with the life forms. Soleri believes that sprawling lower life forms –such as bacteria, mold etc.- give ways to the most sophisticated life forms through evolution. Similarly, human city produces *complexity, miniaturization and duration*. Here, *complexity* means that many events and processes are going on in intensification, *miniaturization* refers compact rearrangement of space and *duration* is the process, which implies the extension of time. So that, non-city/non-country temporary evolving sprawl can be regarded as low forms of life and inefficient organism with inhuman scale. It evolves contradictorily to natural evolution pattern of the creatures (Luke, 1994). When we think about evolution process, which on the creatures defining their habitat precisely survive and perform successfully, such a categorical assumption can be verified. Dinosaurs may be an example to such proclaim.

"…The natural landscape is thus not the apt frame for the complex life of society. Man must make the metropolitan landscape in his own image: a physically compact, dense, three-dimensional, energetic bundle, not a tenuous film of organic matter." And then he addresses the verticality in space: *"…Physical freedom, that is to say, true reaching power, is wrapped around vertical factors…Around vertical factors, megapoly and suburbia can contract, moving from flat gigantism toward human and solid scale…"* (Soleri, 1996: 455-56).

Soleri's design conception was developed within Mesa City Project (1958-67) and then he being improved an ecological model in urban design through last forty-year project, Arcosanti. (see Figure 3.5) Arcosanti is a prototype in the desert region of Arizona, the U.S. It is a highly concentrated urban structure, which allows 340 hectares agricultural and biological areas to be preserved. When being completed, Arcosanti will be a 'city' of the community of 6000 people with the density of 875 persons per hectare –10 times the population density of NY- (Grierson, 2003). It is designed to locate the variety of urban uses –containing homes, offices, parks, schools etc.- within one structure. Hence, greater sense of community would be realized by the close interaction of urban functions (Grierson, 2003). In fact, this is the condition for dynamic social life, which is aimed by Soleri.

What we learnt from Arcology experiment is that the antagonism between urban and natural can be a challenging phenomenon for a positive conception of human settlements in future, by regarding natural ecology apart and creating a new one, which is highly urban. Therefore, such a call for 'back to the land' would be realized not in the form of anti-urban return to nature but rather in an urban one. Arcosanti Project provides a set of indication for a new form of urban space, although it has not involved a specific economic and cultural programming, yet. If it is improved on a complicated policy based away from dominant formal considerations observed, Arcology can become a feasible futuristic model for the centrist urban vision with its well-constituted philosophical background.

4.2 Decentrists: *Dispersion of Urban Environment and Diffusion to Nature*

4.2.1 Anarchist Disurbanism: *Peter Kropotkin (1899) & Murray Bookchin (1974)*

As a social theorist and geographer, Kropotkin is the founder of Russian anarchism. He tried to construct anarchist theory on a scientific base. After a series of deep geographical analyses on various countries, including Britain, Germany, Austria, U.S, Russia and Austria, Kropotkin presented his research results and his ideas on future in his collected works of *Fields, Factories and Workshops* in 1899 (Marshall, 2003: 439-478). As understanding from the title, Kropotkin envisions a planned integration of the processes of agriculture and industry both in one location and organizational system. He predicts that the rapid mechanization of agriculture would promote an integration of town and country. Thus, Kropotkin searches for the possibilities of eliminating the present division between

brainwork and manual work and combining the advantages of urban and rural life. He basically anticipates a decentralization of industry. He shows that electric communication and power, with the possibilities of integrated agricultural-industrial foundations, would yield more decentralized urban development into small units. The new way of life by decentralization is based on the combination of the agricultural with industrial knowledge, urban technical facilities and high level of political co-operation. Such a combination would both advance rural way of life and rehabilitate the urban one (Kropotkin, 1993).

Similar to other prophets of decentrism, Kropotkin also believes liberating effects of new technologies on the societies. Kropotkin realized the impact of technological development on industrial locations. He argues that like steam energy and railroad, which was produced large factories and great cities, electricity would make possible a widespread decentralization. While writing futuristic scenarios, Kropotkin looks back to the village community of the medieval time. He envisages 'industrial villages' as a new version of craftsmen's villages of the pre-industrial area (Fishman, 1989: 36).

Kropotkin, first identifies the categories of industries: *"...those industries which are carried on in the villages, in connection with agriculture, and those which are carried on in towns or in villages, with no connection with the land."* (Kropotkin, 1993: 244). Then, he gives his preference to the first one. He claims that the decentralized system of small-scale cooperation as cooperatively owned cottage industries would be more efficient then huge factories in central urban agglomerations. Beyond his future industrial planning, an envision of related spatial pattern is the central pivot of his book. In such asystem of scattered industries, spatial arrangement of accommodation is assumed to be located in well-preserved countryside in a diffused manner. To him, each family should own five acres –12.5 ha- to gain their living (Kropotkin, 1993).

Kropotkin's envision has not come to real in any actual anarchist movement, but had a widespread inspiration on human intellect. Principally, his envision on spatial decentralization becomes an inspiration for many protagonists, from Howard to Wright, and has been reproduced in different schemas, later. Practically, the Kibbutzim in Israel became the most successful example, experienced ever, by combining agriculture and industry in a decentralized settlement pattern. On the other hand, his imagine on the mechanization of agriculture have not always ended up with desired decentralization in real cases. For example, in developing countries, like Turkey, urban process has resulted in an urban intensification through existing within in present large cities, as the magnets of migration.

Another intellectual protagonist of decentrism in anarchist literature is M. Bookchin. Like Kropotkin, he redefines anarchist perspective with his own conception in an ecological viewpoint. To him, establishing a new society based on decentrality can overcome modern ecological problems. Basic founding principle of the new society, called *confederation of self-government communes,* is direct

democracy. For such a system, he inspires from Greek *polis* both socially and physically (Marshall, 2003: 837-839).

As a social ecologist and/or eco-anarchist, Bookchin gives the fist clear notations on his disurbanist stance with an original interpretation in *The Limit of The City* in 1973. First of all, he distinguishes the concepts of *urbanization* and *citification.* To him, unlike urbanization, citification imposes itself on the countryside and threatens to destroy both town and country. He points out that, *"…urbanism must be viewed as a development of that places us in a unique position to go beyond the city as such and produce a new type of community, one that combines the best features of urban and rural life in a harmonized future society."* (Bookchin, 1986: xi). The limit of the city emerge from the point where bourgeois cities grew to the size that can no more provide minimal services of human habitation in security and equity. This limit does not come out of cities' relationship with countryside, but its physical evolution in itself. Evolution make cities expand without meaning and form, called as *physical massification.* It is being experienced with synchronous process, based on an outer natural assimilation and inner social segregation (Bookchin, 1986: 88, 113).

Unlike Kropotkin, there is no fundamental faith in technological development for future image, in Bookchin's theory. On the other hand, in spite of refusing it with an ecological point of view, he addresses the development of industry to make a rational and ecological synthesis between land and city as much as possible. Consequently, social and cultural development would be carried from cities to countryside, and prevailing dominancy of cities would be reduced (Bookchin, 1986: 3).

To Bookchin, ensuring ideal decentralized society, based on libertarian municipalism, depends on building confederal bodies by assembling people from city neighborhoods to small towns (Bookchin, 1986: 171). It means a dissolve of intensified, concentrated cities and evolution of them through a fragmented, disjointed –but connected- urban system. In his second study on the issue, such a progress is named as *urbanization without cities* (Bookchin, 1992). In this revision, Bookchin crystallize his position on urbanism. To him, a conventional conception of town and country as counter-alternative is no use. The enemy here is not urban but urbanization itself. Hence, urban represents positive values such as self-awareness, rationality, secularized culture and individualism. Contrary, expanding modern urbanization dehumanizes city life, destructs community and denatures agrarian life, as *toxic* to human spirit and region's natural integrity. (Bookchin, 1992: x) Besides, he does not go beyond detailing the statements and does not clarify the idealized process, institutionally.

Although overall ideological positioning of Bookchin is perceived as a compromiser position, his rejection of urbanization is inevitably joins itself with disurbanist standpoint. His critique to modern urbanization solely reflected the process of urban agglomerations. Yet, he dismisses the real consequences of spatial decentralization processes implied by capitalistic system, during the century. Without such a perspective, Bookchin induce urbanization concept to the currently enlarging cities in

a way of concentration and ignores its demolishing effects on urbanity which is also advocated by him. Therefore, Bookchin's critique remains in disurbanist view angle while his envision is not.

4.2.2 Libertarian Disurbanism: *Frank Lyod Wright (1867-1959)*

As the protagonist of decentrism in planning theory F. L. Wright represents an extreme version of disurbanist vision. His vision is based on great urban settlements through countryside. Such dispersion and dissolution of urban being is essentially identified by density and concentration concepts at a certain degree. Behind the physical imagine, there is not only an idealized configuration formally, but basically a significant belief to libertarian democracy. To this ideological perspective individuality and self-determination of individual men are the most important socio-political themes. Physically, its realization in geography addresses the vision of F. L. Wright, atomization of collective entity within a super low-density settlement pattern. In this decentralized pattern, each family would have enough land for a self-sufficient crop production. This is the model of agrarian-based family economy (Fishman, 1989: 122-134).

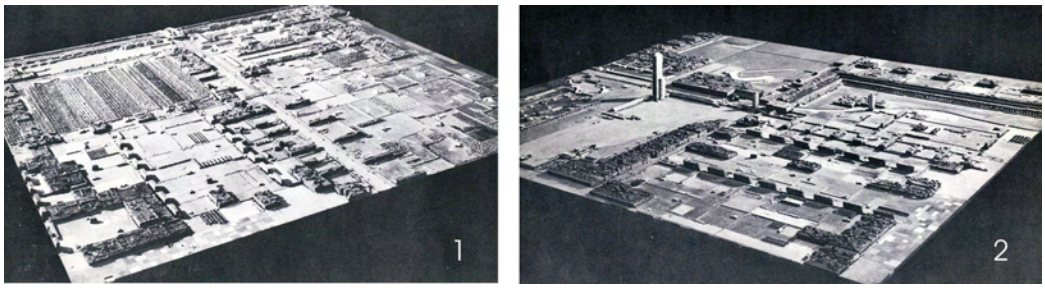


Figure 4.5: Urban sections of Broadacre City: Fields factories and residential areas (1) and civic center (2) (Source: Wright, 1958: 95, 108)

Similar to other decentrist protagonists, Wright also legitimizes his dispersion vision with an absolute belief of the opportunities of technology -motor car, telephone and standardized machine-shop production-. They are the power of scattering centralized cities into rural landscape. To him, physical decentralization as a democracy project is not only a need, but is also an inevitable future trend: *"Machine power itself now denies centralization ancient masters, because it is in the nature of intercommunication and ubiquitous mobility that the big city decenter itself and spread out far away - spread thin, growing high and high only as it goes outward from center. The countryside is the place for the skyscraper."* (Wright, 1958: 83-84).

Such a vision would mean the *emancipation* of society from the city. He believes that the psychology of urban life is harmful to nation's mental health (Fishman, 1989: 124). This also ideologically constitutes its disurbanist reflex. To him, the 'assimilation' of city within countryside would rescue it from self-destroyed growth patter, called *urbanism: "... it is a new integrity bound to scatter servile*

imitation, to take away all urban stricture and depravity first from the regional field and then absorb and regenerate the tissue poisoned by cancerous overgrowth (Urbanism).” (Wright, 1958: 97).

His disfavor of industrial city and capital is complimentary with Jeffersonian perspective of ideal society, which is composed of free individuals working and living in the countryside (Hall, 1998: 287). Within this perspective, he does not look back to the ‘close-knit English town’ but inspired from early American settlement pattern, where each family lives on their own ground. With this physical pattern, he seeks a new social pattern. It is the elimination of rigid specialization between physical and mental labor (Fishman, 1989: 94, 128). Kropotkin’s vision can be traced here.

The Broadacre vision is not a dispersion situation, which is out of control. Instead, it is coded by a series of planning and design criteria. *Broadacre City*, low-density urban spread, is the city where each home is surrounded by an acre of land. Super-highways, enabling fast and easy travel by car in any direction connecting dispersed homes. Such a network produces an urban form, which has not any defined boundary. Neither shape nor scale can be recognized in such an over-sprawl without any recognizable center.

Different from other American disurbanists, Wright does not offer neighborhood concept. His dispersal paradigm does not allow even low-density clustering. There is no need for any compact clustering of settlements within suggested car-based accessibility pattern. Furthermore, his outlook to town and country is unlike to Howard’s conception. Different from Howard, who wishes to marry town and country by making them close to each other, Wright envisions urban-rural unification by joining one another other. He does not preserves adapted separation between urban and rural. He defines the process as the *elimination of cities and towns* (Wright, 1996: 378).

Such an extreme non-city model produces high-energy demands and long distanced provision of water and electricity with excessive cost items. Contrarily, envisaging the traveling mode of private helicopter and car, Wright does not consider energy as a problem. It must be because of the popular fundamental faith in the so-called ‘American Dream’ and its optimistic view regarding economic moments, in the years.

Fundamental failure of the vision of Wright is its realization process. Sprawl-based massive suburbanization lived in the U.S. falsifies his vision with a utopian perspective. It has been proved that urbanization based on super-dispersion does not necessarily produce a new type of democracy practice. Rather, it reproduces and enhances existing one, which has been opposed by decentrist reformists. Additionally, such a process in real should not be assumed to be planned. In fact, it is being taken in an unplanned process without a comprehensive outlook today.

4.2.3 Anglo-Saxon/Anglo-American Disurbanism: *Raymond. Unwin (1912), Barry Parker (1930), Clarence. Perry (1933) and Clarence. Stein (1933)*

The roots of modern 'anti-urban' reactions go back to the period of late nineteenth century in Europe. Poverty, social disorganization, economic inefficiency, crime and lower standards of physical environment in urban areas were continuing in spite of public legislations as the incremental attempts for solution. Those are the material conditions of emerging anti-urban thoughts like romantic anti-industrialism, artistic and literary ideology, agrarian socialism, religious mysticism or general utopianism. It is not a coincidence that the motherland of those reactions is England. Actually, with 72%, Wales and England were the most urbanized societies in the world in 1890 (King, 1996: 455-57). The shared characteristic of anti-urban attitudes is ideological rejection of city and the imposition of an escape from it.

Figure 4.6: Aerial view of the garden city of Letchworth, U.K.-1937 (1) and Radburn, New Jersey, U.S. -1929 (2) (Source: Howard, 1960: 97, 112, Stein, 1957: 46)

R. Unwin and B. Parker's mentalities, which are theoretically and practically the most influential ones among others, are also the product of those conditions. Being architects, they engaging in early planning practices of Garden Cities in England. Once looking into spatial standards of industrial city, Unwin idealized a new urban space model, which is founded on housing layout planned around huge village-green-like spaces (Hall, 1990: 97-100). Behind such a disurbanist perspective, there is a political faith on medievalism, via village as a social stabilizer in social, aesthetical and spatial terms against anonymity, rootlessness and diversity –in other word urbanity- of metropolises. (Creese, 1994: xxi-xiii).

Letchworth in 1904 was the first garden city and then Welwyn in 1920. Although it is known that Letchworth has been built according to personal directives of E. Howard, in fact, Unwin and Baker are the main actors who determined basic design codes- density, size, layout, architectural style etc.- and gave the spatial characteristic of the cities. They rejected Howard's design concept on relatively dense rationalistic geometry with utilitarian spatial image and imposed their own design principles.

Typical residential densities of the cities, built customarily were roughly one third lower than those of Howard's suggestions. Unlike Howard's thoughts, there was no faith on industrialization. So the image they entailed was a traditional village settlement concept with organic unity in low-rise low-density. Common spatial nature of the cities was being in the form of pre-industrial-late medieval, rural, domestic, semi-detached, middle-class single-family housing development. Indeed, it was a reaction to multi-storey block dwellings of industrial cities. Since, Parker and Unwin gave its predetermined expression, Letchworth became the traditional style of Anglo-Saxon town planning for decentralized society (Ward, 2002: 32, Fishman, 1989: 64-81). Since Howard did not interested in physical form of the cities as much as social progress in practice, the physical character, which was determined by Unwin and Parker, formed the social/political spirit at the end. It is quite different than Howard's imagination.

In the interwar period, many versions of 'garden suburbs'-not garden city- have been built in England. After practical successes of the projects, this planning ideology was accepted broadly and it turned out to be the British official state policy from the first Town Planning Act via the later legislations. Then, by means of 'imperial connections' new planning and design mode –low density, quasi village lay out- was exported to various geographies like India, Australia and South Africa (King, 1996: 457-58). Today, the city of Canberra is still striving from the problems of low-density, low-rise urban pattern, inherited from British styled disurbanism.

Like the continental Europe, British planning ideology spread over to America, as well. From 1933, New Deal policies, introducing countrywide regional decentralization programmed by RPAA, gave a way to idealize and implicate the American version of the British decentrism. Theoretical interaction was not difficult, since American decentrists were in close contact with British ones in those years (Hall, 1990: 159-65). In this context, one of the most significant contribution to the emerging decentrist tradition came from C. Perry, an American community planner. He developed 'neighborhood' concept as functional unit for suburban settlements. Neighbourhood unit is based on the catchment area -walking distance- of community facilities for about 5,00 people (Mumford, 1961: 501). It is important because, Perry's new conception became a practical tool for later suburban planning in the U.S. and Europe. Another prominent campaigner and planner of new towns in America, C. Stein had taken neighborhood concept further and developed a model of design layout, based on planned segregation of vehicular traffic and pedestrian ways in suburban residential areas. He applied the model in Radburn, New Jersey in the 1930s. Then, it was adopted not only in America but also in Britain after the Second World War (Gatti, 2003).

In those plans, which were developed by Stein, automobile is not rejected but it is handled. Two basic elements of Garden City idea were eliminated: industry and greenbelt. High-rise urbanism was principally rejected. Like other decentrist approaches, bringing people closer to nature was aimed. That's why; the density level was kept low -22 dwelling unit per hectare- with dominant open spaces in the whole. (Stein, 1957). In those design layouts, buildings do not serve as continuing fences, which

designates ‘the street’. Buildings are free from an association, which form a street. Urban vitality in public space is destroyed by strict separation within a disurbanist point of view.

Fallowing versions of the suburbs in the U.S. -such as Greenbelt- have very low-density gradients between 10 and 20 dwelling unit per hectare in post-war period. Then, the transformation of Anglo-Saxon urbanism in America was realized by evolving from *decentralization* into *dispersion* and even *diffusion.* Decentralization, developing of outer small towns in a broad sense, reinterpreted in Anglo-American planning context as widely spreading of development over rural areas by the diffusion of formless suburban masses. It was not a *sub-centralization*, rather an *a-centralization*. (Osborn, 1960: 28). There is no doubt that it is far away from the Howard’s viewpoint. Implied disurbanist policies made American urbanism choose an alternative among decentralization vs. extensive sprawl, but not between the choices of high-density developments vs. decentralization (Osborn, 1969: 136-37).

One of the most important failures of Anglo-Saxon disurbanists is the confusion and misinterpretation of the phenomenon of density and crowdedness. The title of Unwin’s most influential pamphlet is *Nothing Gained By Overcrowding* (1912). By observing late industrial cities and their poor conditioned high-density crowded slums, they created an imaginary conceptualization that high-density necessarily means over-crowding. In fact, the prototypes of industrial slums compose both densely built-up land and many dwellers per individual room –2 persons per room- (Hall, 1992: 36). Therefore, overcrowding of dwellings was taken identical with high ground coverage (Jacobs, 1961: 205-207). Yet, overcrowding in there was not a result of dense urban space layout physically, but it was directed from poor socio-economical conditions. The result inevitably became an immense desire for dissolving compact space structure by scattering it and ensuring open land at low densities. Such an aspiration has been fed by established prejudice of Anglo-Saxon disurbanism against high-density living in modern urban planning for decades. Then, it had been carried to American planning system forming the Anglo-American edition. In most planning schools –even today- such a manner has been accepted as a ‘scientific’ solution to the problems of urbanism.

4.2.4 Soviet Disurbanism

Urban theory fails to explain why urban form in socialist nations is so similar to that in capitalist cities. About the problematic of urban compactness, clarifying and comparing the ideological choices behind the so-called diverse poles of urbanism can be applied to overcome such a theoretical need. Therefore, the early phase of Soviet urbanization and academic debates in that period give some clues about the question about such a similarity between Soviet and capitalist cities.

The established approach of decentralization can be grounded in Marxist theory. In the original writings of Marx and Engels, a reaction to the consequence of capitalism in urban space results in a kind of rejection of capitalist cities, but not urbanity. Actually, such a rejection does not solely derive

from a spatial context, but chiefly from non-spatial one. In *Manifesto of The Communist Party*, capitalist urbanization is interpreted as fallows:

"The bourgeois has subjected the country to the rule of the towns. It has created enormous cities, has greatly increased the urban population as compared with the rural, and rescued a considerable part of the population from idiocy of rural life." (Marx et al., 1998: 15)

Original perception of the 'urban' – both socially and spatially- in socialist thought is important to understand the urban practice of real socialism. In theory, city is depicted as the *evil of capitalism* with poor conditions of labor class suburbs in industrial settlements. Conversely, it is thought as the milieu and necessary condition of progressive forces of socialism, positively (Saunders, 1981: 25-26). At the last phase of historical progress through communism, cities are not envisioned as central mechanisms with an a priori assumption. So, at the lasts phase of analyze, it is positioned in a *disurbanist* standpoint, ideologically. –Although there seems little basis for developing a theory of *urbanism* in classical Marxist perspective- Hence, solution of urban problem is stated principally as a gradual abolition of the distinction between town and country by a more equable distribution of the population over the country.

"The abolition of the division between town and country is therefore no utopian ideal, not even from the point of view achieving the most equal distribution of heavy industry through the country. Of course, civilization has endowed us in the great cities with an inheritance, which it will take much time and trouble to shed. But they must got rid of, and they will be, even if the process is along one." (Engels, 2003: 421).

This is also the essence and the root of Soviet *disurbanism* realized by a long-term de-densification and decentralization policy process. Soviets inherited intensively developed urban agglomerations similar to the Western typed metropolitan region. It was proposed that by deconcentrating large cites into peripheral areas, decreasing densities and redistribution urban populations would be beneficial to overcome the disadvantages of large cities. This became the backbone of Soviet urban policy through satellite cities and suburban zones adjacent to large cities (Reiner et al., 1979: 56).

To achieve such a policy direction, which was broadly characterized by an immense theoretical debate was necessitated after revolution. Search for the creation of 'new society's urban form was constructed on the antagonism between two rival camps*: urbanist* and *deurbanists schools.* In the late 1920s, competing approaches for reconstruction of new socialist city formed on the base on two alternative models: According to urbanist-school approach, self-contained urban centers with multi-storey collective living facilities, emphasizing the distinction between agriculturist and proletarian was essential. In centralist perspective, large cities were rejected but compact communities adjoining large industrial units were idealized. They were suggesting 'dwelling combine's, which are dense collective settlements in district size. Contrarily, deurbanists favored construction of two-storey houses to be used for linear cities through the countryside. To them, large cities should be simply replaced by small ones. They reject all forms of compact town planning. Their standpoint was much more close to the Marxist urban conception. They saw city as outmoded and sought to dissolve urban areas through a boundless sprawl (Bater, 1980: 22-26; Frampton, 1968: 238; Oppenheim, 2003).

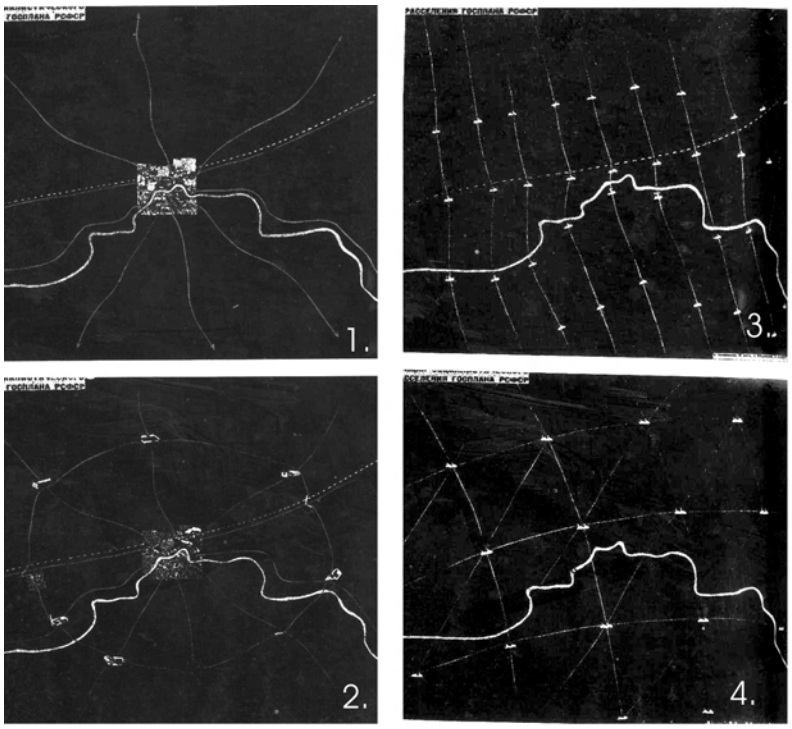


Figure 4.7: The Socialist settlement section in a 'state plan' and settlement schemas according:
(1) Disurbanized (2) Decentralized (3) A-centralized (4) Disperse: *Dissolution of urbanity* (Source: Khan-Magomedov, 1987: 318)

After a series of polemical debates about fifteen years, The Central Committee of the All Union Communist Party issued a directive, restricting further debates of the so-called 'idealist' principles. A compromiser theory of *dispersion cities* received an official approval after a party directive. The committee discouraged further developments around existing urban centers. The 'Right wing'

arguments supporting centralist point of view were labeled as *reactionary, anti-Marxist* or *left-deviation* (Frampton, 1968: 238-39*).* This became the end of visionary ideas on urbanism in Soviet socialist intellectual circle.[2]

This political shift encouraged the spread of large cities in a decentralization process. The most important stage of the process became the reconstruction of the capital city, Moscow. After foundation of 'Giprogor' (State Institute of Urban Planning) plans prepared for about a hundred other Soviet towns and cities postulated a disurbanist concept of 'park-like city', which stand on low density, scattered, fragmented and horizontal space structures. With the reaction to concentrated city, new settlements were built as close to nature as possible in small units and old cities were tried to be open out with green areas (Khan-Magomedov, 1987: 273).

Le Corbusier, who prepared a plan proposal for Moscow, which was rejected by the Soviet authorities in the 1930s, criticizes the rationale behind Soviet urban policy from centralist perspective: *"…The Soviet thesis: large towns are an expression of capitalist regime, they are monstrosities which imprison millions of sufferers. All large towns must be cut up, dispersed and re-assembled in open country. Such is the doctrine of disurbanization that is now all the rage in Russia.'* (Le Corbusier, 1967: 135).

Prevailing attitude towards spatial concentration and urbanist approach was also prolonged through the 1970's. In 1969, The Soviet Academy of Sciences declared in an international platform that *"The elimination of differences between town and country, the increase in labor productivity and in effectiveness of social production, the rise in the cultural and educational level of population, and all-round development of the individual- all these things are closely associated with urbanization."* (Reiner et al., 1979: 56).

[2] These ideological break point coincidences with the Soviet withdrawal from internationalist socialist movement in early thirties. For further influences of this political shift, see: Hugh, D. H. J., *Blueprint and Blood: The Stalinization of Soviet Architecture, 1917-1937* (Princeton University Press: New Jersey)

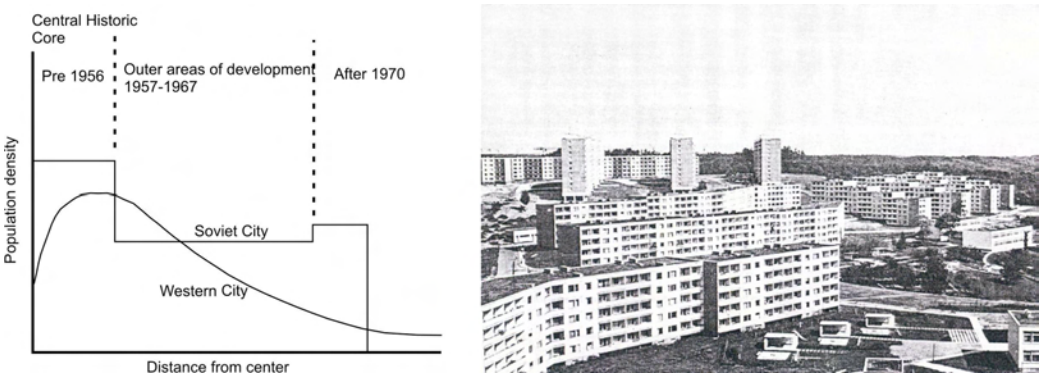


Figure 4.8: Urban density gradients of Soviet and Western cities and an aerial view of a residential district of Vilnius, Soviet new town built in the last phase-after 1970-.
(Source: French, 1979: 89, U.S./U.S.S.R. New Towns Working Group, 1981 *Planning New Towns* pp 131)

After 1970, the policy was transformed into a kind of 'high-rise disurbanism'. Even decentralization process was going on, for the plans, it was announced that minimum height of new blocks must have been fourteen to twenty-five storeys, in 1974. By the 1980s in new towns, building type of single-family dwellings at lower density was gone (French, 1979: 88). This is the last phase of Soviet urban policy, which formed Soviet City different from Western City in the density gradient. In spite of long termed decentralization process Soviet City remained denser than typical Capitalist City, in overall. (see: Figure 4.8) The reason for the lack of adoption of the theory of full-dispersion into practice is rather an economical situation. Since, provision of necessary technical and social infrastructure in the countryside in order to link peripheral settlements with urban centers was too difficult for a developing country (Parkins, 1953: 28).

Actually, at the end of disurbanist process, The Soviets created another similarity with capitalist urban system in addition to the urban agglomerations: satellite towns surrounding Moscow, Petrograd or Erivan. However, these are not substantially different from those around Washington D.C. or other American metropolises. They were all dormitory suburbs, whose urbanities are subject to be discussed with reference to reduced density, diversity and vitality they provided (Khan-Magomedov, 1987: 271-72). Such a resemblance between two worldviews is direct result of the misinterpretation of Garden City idea of Howard, which was also influential among Soviet planning thought. Even though, they were named as 'Workers' Garden City' or 'Red Garden City', those settlements provided very similar 'urban' conditions with their capitalist counterparts. Especially deurbanists vision was quite similar to sprawl based urbanization experienced in the United States after a short period of time. Even the distinction between socialist and non-socialist cities was idealized in rhetoric, the last point they have achieved became the same: disurbanism.

4.2.5 Ecologist Disurbanism: *The Ecologist (1972), E. F. Schumacher (1973), Ernest Callenbach (1975)*

Anti-urbanist version of decentrism has always been practiced by environmentalist thought. Its root goes back to 19th Century reaction against economic liberalism (Owens, 1992: 79). This approach was especially developed by the 1970s' environmentalist philosophy.[3] In the ecologist declarations in time, there was a pure rejection of the modern industrialization and a call for simpler life based on craft and community. In broad term, dispersion of large cities are promoted in ecologist 'green thinking', as small villages and communes praised. Economic self-reliance, small scale economical and social organizational forms are the key themes in ecologist theory (Haughton et al., 1994: 290). Decentralization of urban geography is a complementary objective for ecologist mode of thinking.

In the 1970s, when public opinion is widely in reaction to modern industrialism, the ecologist groups became much more influential in economical and political literature. From them, a group of thinkers, which were called as their publications' name- *The Ecologist*, presented one of the most leading ecologist promotions. In *Blueprint For Survival* (1972), they declared that a new social system based on decentralizations is needed. To them, *urban drift* does not only result in ecological disruption, but also has a decaying effect on city life. Thus, they suggest a series of operation theme, regarding minimum disturbance of ecological progress and maximum conservation of energy and materials. The operational theme on physical development anticipates the *formation of communities enough to be reasonably self-regulating and self-supporting* (Goldsmith et al., 1972: 25). With small communities as the basic unit of society, it is aimed that a diversified urban-rural mix can be maintained. Then, returning domestic sewage to the land would become much more available with reduced transport costs. Such a fragmented urban structure is assumed to reduce the cost items of disturbing food and removing wastes. In this sense, they oppose to high-rise urbanism in order to solve sewage treatment problem with village type settlement forms, where the problem belongs to each single family (Goldsmith et al., 1972: 50-54). Another main assumption on dispersion is about travel demands. It is principally believed that by decentralization, more stable societies would be created with a diminishing demand for mobility (Goldsmith et al., 1972: 58). This is a pure formulation of ecologist disurbanism.

After The Ecologist, E. F. Schumacher presented his provocative study in 1973: *Small is Beautiful*. An anti-urban outlook is also valid in his viewpoint. The major argumentation of Schumacher is the economic inefficiency of large-scale organizations as *production by masses*. Instead, he addresses small-scale production pattern. His envisioned revision is based on smaller producers, smaller governments, smaller communities and accordingly smaller settlements. Schumacher calls such a revision as 'balkanization', in a positive manner (Schumacher, 1977: 57). His anti-urban response to

[3] See: Ehrlich, P. R., Ehrlich, A. H., 1970 *Population Resources Environment Issues In Human Ecology*
(W. H. Freeman: San Francisco), Goldsmith, E., 1972 *Blueprint for Survival* (Houghton Mifflin: Boston)

ecological devastation is coupled with his negative perspective to gigantic economies. Thus, self-supporting communities can be achieved by decentralized small settlements not by large central cities. While honoring small towns, he declares modern megapolis as the product of 'pathological growth'. Principally, an urban settlement should not exceed the population of 500.000 (Schumacher, 1977: 61). Urban rejection is also appeared in thoughts on metropolitan life, which represent intensity and diversity. To him, urban men suffer from *anonymity, atomization* and *isolation*. Contrary, rural culture offers *health, beauty* and *permanence*. Therefore, a reconciliation of man with nature is necessary, and can be fulfilled by opening rural land to larger numbers of people (Schumacher, 1977: 104-5). This is purely a formulation of ecologist disurbanism.

The emphasis on 'smallness' in Schumacher's ecologist theory should not conceived as only a problematic of size. Besides, it includes a connotation of dispersion. Here, smallness is used as a tool for dispersion of consolidation large cities in the context of human settlement. From this point of view, it corresponds to a disurbanist positioning, which became one of the most serious mainstay for contemporary decentrist, even today.

One of the most expressive forced ecologist visions belongs to E. Callenbach with its novel *Ecotopia* (1975). Ecotopia is Callenbach's modern utopia, where people, withdrawal from USA, lead an ecologically ethical life in west coast of America in the 1980s. Expressions in the novel also represent writer's ecological vision and give a number of clues on anti-urbanist view angel. In Ecotopia, former large metropolitan area is splited into urban and rural regions as small local communities. Automobile use is restricted. Almost all roads are converted into recreational areas and skyscrapers into apartment blocks –as a reaction to high-rise urbanism-. Within small settlements an urban image is strictly avoided. Streets are not geometrical and narrow. Even though average density is 90 pph., vast of urban parks were build to ensure anti-urban living conditions. Such a decentralized pattern allows cooperative way of life in a community sense. Dispersed mini-settlements make huge electric stations unused and activate disparate sun batteries to meet energy demand. Giant industrialism is rejected and small-scale production is encouraged (Callenbach, 1994). Even if it is not constructed on a scientific assumption but on a visionary outlook, Ecotopia can be regarded as one of the most successively illustrated ecologist/disurbanist fiction in the literature.

The main paradox of ecologist thinking on the problematic of urbanization is the anxiety about increasing per capita consumption and the advocacy of urban decentralization/dispersion. Two problematic is not contrary, but complementary with each other in today's urban context. It is widely discussed that decentralization encourages one of the most substantial consumption process today: consumption of land. Furthermore, another basic ecologist assumption on the relationship between mobility and decentralization is also questionable in sustainability debates today. Hence, an excessive automobile-based mobilization is the most serious ecological problem for widely decentralized developed countries. Therefore, backing-up urban dispersion by regarding ecology includes a serious dilemma in itself. In that sense, ecologist thought needs a revision on its urban philosophy by

reconsidering compactionist/centralist perspectives. Otherwise, it is to be marginalized in contemporary urban theory.

4.3 Compromisers: *Balanced Integration of Urban Environment With Nature*

4.3.1 Ebenezer Howard (1898)

In spite of the fact that E. Howard is widely known as the father of decentrist approach in planning theory and harshly accused of being a *villain* of urbanity by urbanist perspectives (see: Jacobs, 1961, King, 1996), he actually should be regarded not as a centrist nor a decentrist. Instead, it should be better to consider him within a compromiser position.

Howard perceives decentralization mainly as a political project for the creation of a cooperative civilization, arranged in small communities. These communities can be embedded in closely linked atomized settlement system. To him, large cities were not a suitable place to live in. Then again, countryside was uncomfortable for future way of life. So, there should have been a third way out. This was the synthesis of town country. The new conception, he offered, was based on pre-assumptions of the combination of the opportunities of urban and rural environment. To Howard, the marriage of two opposite poles offers a set of new advantages for future civilization like easy access to nature, low rents, flow of capital, freedom and cooperation (Howard, 1960: 41-49).

According to plan schemas, the town occupies on 2,500 hectares and surrounded by 12,500 hectares of greenbelt of agricultural land. Greenbelt is a planning tool for controlling urban growth not to overspill to countryside. Howard illustrates a cluster of garden cities linked by railways and forming a polycentric urban system, called as *Social City*. Each city has a core, designed with a group of public buildings and a garden. It is accessible by radial boulevards. The central area is surrounded by residential areas, which are divided into neighborhoods. In periphery of the urban area, industrial and commercial areas are located. Size and density of the city allows walkable distances within the settlement. Cities are not closed to each other, but in a close contact with other adjacent cities by quick rail access (Howard, 1960: 50-57).

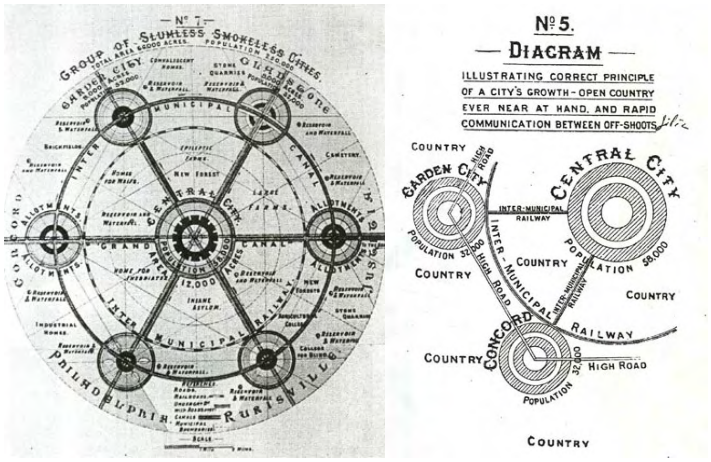


Figure 4.9: Regional network of Garden Cities (1) and the diagram illustrating growth of cities (2). (Source: Ward, 2002: 22, Howard, 1960: 143)

The plan schema can be considered as 'contained decentralization' or 'multi-centered agglomeration'. This is the point, which differentiates Howard from the so-called arch-decentrists (Breheny, 1996: 16). Howard's density assumption -and urban image in relation- is barely different from general ideas on it. Each Garden City is for accommodation of 32,000 people. Offered average size of building lots are 6 * 40 meters (Howard, 1960: 54). It equals to the residential density of 37 houses per hectare. This means 200-220 people per hectare with the family size at time. –it equals to 100-120 p/ha today- That density level is higher than that in historical city of London in those years (Hall, 1992: 37). Solely, that reality is enough to change the widespread judgment about Howard being seen as a campaigner of disurbanism. To Mumford, *"…For Garden City, as conceived by Howard, is not a loose indefinite sprawl of individual houses with immense open spaces over the landscape: it is rather compact, rigorously confined urban grouping."* (Mumford, 1960: 34).

Additionally, when it is focused to the plan schema, it is perceived that Howard seriously searches for an urban complexity by carrying activities within a human-scale container. That certainly creates an urbanistic diversity by intensifying varied urban functions in urban space. Despite a kind of segregation, which is read from the plan schema, we should not mislead that within such a concentration, this arrangement generates a noticeable urban mixture. This directly results from bounded formation of the plan.

The vision created by Howard represents a continuum of Anarchistic model. He was quite influenced by writings of Kropotkin. He borrowed the idea of town and country marriage from Kropotkin. Differently, he proposed small settlements enough to satisfy human needs identified by anarchists, but large enough to produce urban civilization, social cooperation and complex division of labor.

The misfortune of Howard is the misinterpretation by the followers. The logic and intention behind his vision is not disurbanist one. Hence, the image, presented by Howard does not refer a model of 'the gardens in the city', rather 'the cities in the garden'. This connotation is important, since it determines the spirit of imagination. In broad sense, while the first one pertains on a sub-urban mode of space, fragmented, loose and scattered, the second one is based on an urban model. Even though they are separately clustered in geography, designed nodes remains in urban character by density, layout and size. We think that Howard's imagination does not subscribe the first one, but the second. His objective is formation of multi-centered, intensified urban environments, within easy access to nature, as an alternative for the prototype of large, bulk and closed industrial city. In other word, they are planned compact nodes in open countryside. Just because of that, Howard's line of thought should not be regarded as disurbanist interpretation of the city. Like other compromisers, he desired a balance between nature and built environment. His objective was not to dissolve urban entity at all, but to reproduce within a new manner without denying proper conditions of urbanity.

4.2.2. Kevin Lynch (1961)

In the literature of city design K. Lynch is known as an urban intellectual with its widely referenced catalog studies. Even in those studies there is not any significant normative positioning ideologically, he presents an urbanist stance regarding both macro and mezzo scale. His emphasis on 'legibility' as a design criteria for cityscape, inevitably direct his theoretical preference in favor of not scattered, dispersed urbanization models, but to more concentrated, integrated and well-defined -therefore legible- organizations of space.

To him, the city can be enjoyed by its 'urbanity', its diversity and high level of interaction. This conception belongs to centrist urban model. By defining 'Good City Form', he describes the density of development as a regulation to promote the compactness of space, to develop efficiency for infrastructure and service, and to improve community character and environmental quality (Lynch, 1984: 53). In such definition there is not a prejudice against density factor of design. He deplores spread-out-city because of its high-consumption of land, costly utilities and infrastructure and provoked social isolation (Lynch, 1984: 403). On the other hand, he sees the gradual decline of overall density of cities *irreversible*. Maybe this is the reason why he is away from producing a persistent urban model, which completely supports his idealization of urban space. Instead, considering the real trend lived, he addresses the model of 'clustering'. In that form of settlement, relatively high-density housing is set in open space at a low average density. High-density clusters are pushed for preserving natural landscape while simultaneously permitting urban development. (Lynch, 1984: 404) As housing type, he considers *dense walkups* as the least expensive form of settlements establishing a sufficient density and continuous ground floor frontage (Lynch, 1984: 412-13).

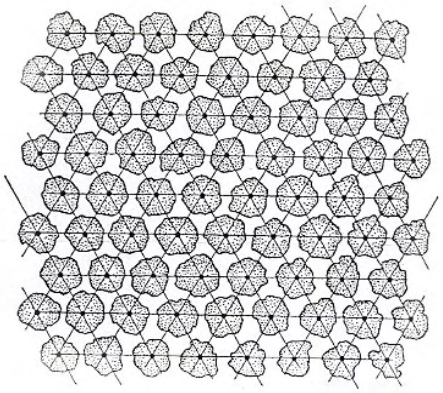


Figure 4.10: Abstract model of *The Galaxy of Settlements.* (Source: Lynch, 1990: 52)

This sort of a settlement type is modeled in 'The Pattern of the Metropolis' and -called as *The Galaxy of Settlements.* In the study Lynch takes urban compact city model (*The Core City*) as one of five basic metropolitan patters. Nevertheless, his interpretation on the model is not in favour of it. The solution, served by The Core City, is found rigid and inadaptable to changing conditions of probable re-arrangement within dense urban fabric, however it strengthens sense of community. Conversely, clustered decentralization is positively regarded as provision of close contact with open land while guaranteeing a flexible urban structuring. As a result of a continuous decentralization, in the model of *The Galaxy of Settlements,* small dense units of concentrations are linked by the transport network (triangular grid), which is dependant on private car, because of low overall density. Each those concentrations are specialized as activity centers (Lynch, 1990: 51-53).

Lynch advocates a structural model for being a growth guide opposing to uncontrolled even dispersion. According to him, with its multi central urban structure, urban galaxy provides a wide range of choice than pure dispersion, which produce similar (sub)urbanities over a wide area. Furthermore it offers a great accessibility to open country (Lynch, 1990). Yet, Lynch fails to illuminate the planning conditions to control such a structure maintaining that solid-void relationship. Hence, such a model may possibly tend to become medium-density urban surface without continuous green area structure in between urban units.

Lynch's compromiser position in planning and design theory derives from his search for a balance in urban space. To him, *"…The modern city requires a rhythmical balance between enclosure* -can be read as compactness- *and openness [between] concentration and freedom."* (Lynch, 1990: 46). Such a mode of perception of urban space makes him produce a more pragmatic model like The Galaxy of Settlements without disregarding the design principles he supports.

4.3.3 Victor Gruen (1964)

Although, V. Gruen is not being quoted in compact city literature currently, he was one of the important representatives of sprawl criticism in America during the 1970s. As a practitioner of planning and architecture and theorist of urban form, his criticism does not stand at a counter-argumentation but provides an abstract model, which is an alternative to dispersion type urban development.

His basic assumption is that instead of just growing, urban societies should learn how to *grow up.* So, inner and vertical growth, suggested by Gruen, entails his compactionist point of view. He interprets American urban pattern as *shapeless*, *poorly served* and *under-developed metropolis.* Instead, he argues for medium sized, dense, urbane, cellular metropolises. For him, major land use criteria of a cityscape are *compactness, strictly defined boundaries* and *cellular organization* (Gruen, 1973: 200-3). Then, all he achieves is a set of guiding planning principles, which are separation of humane and utilitarian functions and the cellularity within a legible hierarchy. For him, such a vision is not an imaginary model. It has a practical feasibility that by means of technological progress and substantial saving of surfaces for man-made environment, a great intensification of land use can be achieved.

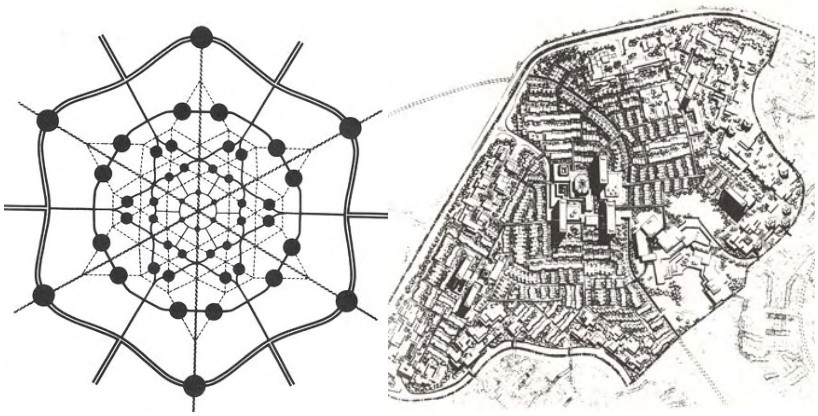


Figure 4.11: Abstract model of urban organism-The Cellular Metropolis and Gruen's design for a neighborhood center. (Source: Gruen, 1973: 209, 238)

His method of compact clusters is ended up with the abstract model of *The Cellular Metropolis.* Basically, it is an analogy of a biological cell structure with its central nucleus, encircling plasma and bounding epidermis (Hill, 1992: 312). In the abstraction of development prototype, metropolitan area covers about 210,000 hectares where thirty percent is occupied by cityscape and remaining is urban greenbelt, which is integrated with urban structure. In fact, such a solid-void relationship in urban structure is the reason why *The Cellular Metropolis* cannot be considered as a model in purely

centralist, compactionist branch of urbanism. Total urban population is assumed to be two million, which is a population of medium-sized metropolis. In settled areas, urban density is 200 persons per hectare. For him, it is the feasible threshold to establish the qualities of 'urbanity' and 'livability' in a truly urban environment. In his planning programs, density is the condition for non-automobile dominated environment to avoid waste use of land and the provision of diversity and variety. Therefore, single-story one-family houses are avoided (Hill, 1992: 312).

Around the metropolitan center, there are arranged urban subunits: neighborhood, community, district and town centers. These are the elements of multi-centered structure by concentration of urban development around centers through a multifunctional character. In the transport schema, although public transport has a vital role in the system, the plan is mainly based on highways and roads. The peripheral ring road performs as an *outer defense line* against urban encroachment to fringe (Hill, 1992: 204-09). His compromiser positioning also result from that transport preference. Hence, his vision is lacks to present a serious alternative to American automobile-based suburban megapolitans.

To enhance urban compaction structurally, communication lines, pipes and public and individual transportation are utilized as the tools to regulate surface areas. On urban surface, rather than prescribing a maximum density, minimum urban density is determined to achieve admired compactness level. Principally, multi-functional arrangement of land use can be taken as a complementary planning criterion of the model.

Gruen's planning ideology is a direct product of environmental determinism, which such a mode of thinking was fading away in those years. He believes that proper spatial planning could be solution to increasing consumerism, especially for spatial one. A model of diverse urbanity within dense metropolises can ensure such an upgrading. Hence, behind Gruen's urbanist stance, there is a thrust to American urban tradition, which is a creation of global metropolitanism. This is what differentiates Gruen from early determinists who were in a reaction to declined modern industrial metropolitan urbanity. Additionally, he does not offer a final product with a pure geometry. Instead, he presents a flexible abstraction, which can be re-evaluated in different contexts. On the other hand, what makes dissimilar from contemporary compactionists is his search for compact urbanity free from present densely populated suffering cities and intention to build new cities to struggle with suburban sprawl.

With regard to urban design methodology, Gruen's contribution is the technique of 'three-dimensional' planning, proposed by him. For Gruen, multipurpose use of land and urban organism enforcing minimum mobility can only be created through such an outlook to urban space. This attitude can easily be observed in his master plans. In his central area designs, a combination of vertical and horizontal patterns is legible. While residential and office activities are placed above the ground, finely grained humane functions are located on urban surface. Furthermore, in macro urban schema, the hexagonal space organization is another design style, which was improved by Gruen.

CHAPTER 5

VITALITY OF URBAN COMPACTNESS: COMPACT URBAN FORM AS A TOOL FOR SUSTAINABLE URBAN DEVELOPMENT

In this chapter of the study, the reason why urban compactness is addressed in sustainability literature is cleared. Therefore, the main considerations of sustainability theory are related with the problematic of urban compactness. By sounding the related themes with compact urban form as a sustainable model, the rationality behind contemporary advocacy of urban compactness is discussed. This chapter basically aims to determine the major drive behind compactness arguments for sustainability.

5.1 Sustainable Urban Development: *A Framework*

Despite emerging political disputes on the definition and the past experiences of it, sustainability is widely accepted as a goal for urban development in contemporary world.[4] In common definition, sustainability refers a kind of *development that meets the need of the present without compromising the ability of future generations to meet their own needs* (WCED, 1987). Solely considering the definition, there is likely no need to dispute on such a broad ideal. Hence, the most disagreements on the issue do not derive from the principles of sustainability but from its realization.

As a term, sustainability came into agenda in early 1980s. Because of the unaffordable conditions, resulting from current economic development patterns in the world, it became indispensable to activate a paradigmatic shift in the conception of environment and development. United Nations-initiated Brundtland Report 'Our Common Future' (WCED, 1987) is a break point for such an alteration in 1987. The new conception is based on an a-priori perception of environment as an integrated component of development process:

"Development cannot subsist upon a deteriorating environmental resource base, the environment cannot be protected when growth leaves out of account the cost of environmental destruction… Thus, economics and ecology must be completely integrated in decision making and lawmaking process not just to protect the environment, but also to protect and promote development." (WCED, 1987: 37).

[4] For counter-argumentations see: Claver, H., 2002 "Doğa, Neoliberalizm ve Sürdürülebilir Kalkınma: Charybdıs ve Scylla Arasında (Nature, Neoliberalism and Sustainable Development: In-between Charybdıs and Scylla)" *Özgür Üniversite Forumu* **19**, 54-72, Çınar, M., "Az Gelişmiş Ülkeler ve Sürdürülebilir Kalkınma (Undeveloped Countries and Sustainable Development)" *Aydınlanma1923* **49**, 11-16, Treanor, P., 1997 "Why Sustainability Is Wrong", http://web.inter.nl.net/users/Paul.Treanor/sustainability.html

This point of view finds its root in the "Declaration of the United Nations Conference on the Human Environment" in 1972. The principles (13^{th} and 14^{th}) in the declaration evaluate planning as an incorporated mechanism to ensure the balance between development and protection.

" …States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve the human environment for the benefit of their population. Rational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect environment." (Panjabi, 1997: 314).

This kind of an outlook employs the concept of balance referring not only a symmetrical relationship between environment and development but also between urban and rural. By wording the emphasis on *"Rural and urban development strategies and approaches should be complementary rather than contradictory"* principle (WCED, 1987: 246), Brundtland Report also represents a changing approach towards the conventional phenomenon of urban development. To Newman, under the reality of urbanizing countryside, major environmentalist struggle in the past oriented itself to the cities rather than to natural environment. At this point, city is being conceived as a dynamic and complex *ecosystem* today. By envisioning the city as a whole, it became possible to analyze it with its pathways along which the inputs -energy and materials- move. It provides a certain base for planning and management systems of sustainable urban development. (Newman, 2001) This base does not stand a reactive mode of action towards urban problems. It concerns with symptoms rather than causes of the problem. Referred approach changes the agenda of urban planning practices related with the sustainability issues in different countries. Rising sensitivity on sustainability at urban level calls for solid-based set of criteria for decision-making processes. At the Rio Earth Summit, the need for these criteria is emphasized in terms of integrated environmental and development systems. (Panjabi, 1997: 317-22).

It should not be thought that there is unique approach to urban sustainability. Based on the differences of interpretation, there are mainly four models of sustainable city:

1. *Self–reliant cities* - Intensive internalization of economic and environmental activities, circular metabolism, bioregionalism and urban autarky: Emphasize on sorting out urban problems from within the cities by building self-reliant local economies. Integration to nature through decentralization.
2. *Redesigning cities and their regions- planning for compact, energy efficient city regions:* Improving building environment through use of less energy and conservation of recourses.
3. *Externally dependent cities- excessive externalization of environmental costs, open system, linear metabolism and additional carrying capacities:* Market-centered approach to sustainable urban development through reducing environmental impacts through making polluters pay for full negative externalities of their actions.

4. *Fair-shares cities- balancing needs and rights equally in regulation of the flows of environmental value and compensation systems:* Explicit concern for the environmental end social equity through reformation of uneven resource allocation. (Haughton, 1997).

This classification provides a framework to identify particular sustainability solutions with regards to their political and ideological context. From them, first two alternatives directly refer a spatial model re-producible at urban and regional level.

The specific character of sustainability, which differs it from ecological discourses, is its theoretical emphasis on urbanity. It is not an a-priory principle but result of objective realizations. The cities are perceived as the major consumer of world resources and the major procurer of pollution and waste today. So it is widely accepted that if cities are planned, designed and managed by limiting recourse consumption and pollution, global sustainability objectives can be achieved (Breheny, 1992b: 2-3). So the role of cities and planning them as the solution of environmental problems becomes much more important than before. It makes the generally ignored spatial dimension, which is widely missing political theories, come to scene.

At national level, the first serious response came from the UK in 1994. A series of guidelines and directives were collected at 'Sustainable Development: The UK Strategy'. The document, as a road map of government agencies and local initiatives, highlights the role of the planning system and the need to derive policy, which relates land use and transport. The importance of the report is derived from the strong effect of proposals, which will be basic strategies for different European urban planning practices later. The prominent issues, referred for sustainable urban policies are:

- *" ... to optimize the use for development of vacant urban land to reclaim and develop derelict or contaminated land,*
- *to protect as far as possible, the countryside for its landscape, wildlife, agricultural, recreational and natural resource value,*
- *to maximize access ton facilities for individuals and to markets for business, while minimizing the amount of travel required.*" (DoE, 1994: 79).

Sustainability strategies referred here imply both a change in the direction of attention for ecological discourse from natural environment to urban environment, and focus inside the urban structure. The focus is mainly put through the issues of land use and urban transportation. The current urban phenomenon, as the experienced trend in developed European cities, is stated in 'The UK Strategy'. These quotations can also be accepted as the reason of emerging searches for sustainable urban development patterns and urban forms.

- *Tendency to move out of town centers into suburbs and villages with more commuting into town to work,*

- *Significant increase in car use that led to changes in the pattern of retail and commercial development, to congestion in some urban areas and the loss of vitality in city centres.*
- *Increasing travel to work, for leisure often by car, causing congestion, pollution and noise.*
- *Additional residential development away from town centers, often on previously open land.*
- *Increasing car ownership (strengthen by land use policies in the past) resulted in more land being used for road building. This will directly lead to more land for aggregate provision.* (DoE, 199480-82)

Despite, there is no single definition of urban sustainability, different communities have being developed their original conceptualizations. On the other hand, for both developed and developing countries, a consensus on the operational topics is quite valid today. Those are,

- *Reducing the physical separation of activities of activities, which has arisen, from decentralization and sprawl.*
- *Integrating transport and land use policies from the need to encourage public transport.*
- *Locating trip attractors close to public transport, creating cyclist and pedestrian based urban spaces.*
- *Enhancing higher urban densities to conduct lower energy consumption.*
- *Strengthen policies to provide environmental benefits against undefined/uncertain urban development -saving agricultural and valuable natural areas-* (Breheny, 1992c: 242).

Searches for obtaining any sustainable urban physical structuring mostly inspires from this framework today.

5.2 Sustainable Urban Form

Complexity of the issue of sustainable urban form is derived from the multiplicity of forces behind the formation of cities. Basically, there are three priorities for the development of urban form:

- *Transportation priorities*: Extension of road and transit infrastructure.
- *Economic priorities*: Economies of greenfield developments or redevelopment processes.
- *Cultural priorities:* Socio-cultural perception of urban space. (Kostof, 1991).

The question "how can the spatial form and physical structure of the city help attempts to meet sustainability objectives?" has become one of the prominent concerns in urban planning and design. In fact, what an ideal urban size and form is not a new question. On the other hand, it is not so possible

to address to a precise and specific urban form, which can be idealized as template. To Owens, 'shape' is rather an elusive concept to define urban problematic. It is usually defined in terms of transport networks, yet the transport oriented issues -such as travel needs, transport energy use etc.- more depend on internal arrangements of activities rather than the overall 'shape' of an urban settlement. (Owens, 1986: 32).

To Nijkamp and Perrels, sustainable development is not a predetermined end state, but a balanced and adaptive evolutionary process (Nijkamp et al., 1994: 4). In such a dynamic process, the debates on urban form are made in a different mode of thinking than those in the past. Urban form debates within sustainability paradigm can not conducted on concrete forms presented, but on the schematic models and principles today.

Returning the attention toward 'form' in planning literature mainly results from the last century urban experience of western civilization. Since the dispersed form of metropolitan development have dominancy in urbanization practice, more compact and 'humane' urban form has been widely accepted as a way-out for sustainable development (Bourne, 1992: 510). Hence, dispersion-based development patterns have proved themselves as an unapproved model ecologically, socially and economically for many cases. To Ravetz, theoretical tendency on urban form derived from present urban dynamics, which are increased transport dependency, land consumption and polarization between inner decline and outer growth (Ravetz, 1996: 153).

For Scheurer, urban sustainability policies can be classified in four categories, with respect to their interpretation type of social and physical urban structure. The first one is *technological approach*, mainly concerned with improvements of the physical buildings and infrastructure to enhance resource efficiency. The second one is *community approach*, based on information, education and participation-intensive processes for ecological goals. A third approach is about users' behavior and life style choices -set of values- without regarding the technological innovations. Yet, all of them have limited scope towards any probable physical changes. The final approach is on urban form at macro and mezzo scale. This mode of action mainly contains the strategies to maximize self-sufficiency and energy efficiency by transforming automobile dependent urban forms (Scheurer, 2001: 16-17). While the first approach has the most incremental position, the last approach on urban form serves the most comprehensive and wide-scope approach.

Instead of waiting for probable technological improvements -energy efficient buildings, environment friendly automobile tech., more efficient energy and water systems etc.- for decreasing negative impacts of urban development, it is intended to transform the structure of development pattern. Unless current macro urban structures, which is source of the problem is altered, unsustainable relations continue to be reproduced. Land use pattern and transport structure -basic components of urban form- have a significant effect on sustainability. To Burton, as much as 70% of delivered energy is subject to be influenced by land use planning (Burton, 1990 cited in Williams et al., 2000: 2).

To Ravetz, spatial planning has an effect on sustainable development at the range of 15%. In such a framework, housing, transport and infrastructure, as components of urban form, are taking into consideration with their indirect effects on emissions, energy use and material usage. (Ravetz, 2000: 2)

Basic difference between the urban form debates in the past and those in today's are the contemporary argumentations on urban form. Those in today do not claim to overcome substantial social, economic and environmental problems by certain spatial configurations devised. Idealization of 'Compact Urban Form', which is to be discussed in the study, should be evaluated in this frame.

5.2.1 Problematic of Urban Expansion

In order to describe sustainable urban form, it would be better to refer its contrary, which is dispersion based, scattered urban development pattern.. The phenomenon of urban growth definitely differs from the concept of urban development. While development refers a qualitative progress, growth rather refers mainly the expansion of an entity. What make urban expansion as a counter alternative of compact development are its inherent characteristics:

- Low-density
- Discontinuous, scattered, ad hoc, leapfrog or ribbon development pattern,
- No attempt at clustering, mixing of uses or establishing city centers
- Resource-consumptive automobile-dominated development dynamic (Gillham, 2002: 3-8).

Continental Europe was able to save its conventional urban image, which is based on high density and virtually compact pattern, by adopting strict controls in peripheral areas in reconstruction plans after World War II. In decentralization process, new settlements around large cities were relatively kept bounded and contained. In contrast, lack of planning control in market mechanism results in a suburban boom and current 'urban sprawl' pattern in the U.S. (Bruegmann, 2001: 16087-88). As a result, European suburbs in Europe are presently about four times denser than American suburbs (Beatley, 2000: 61).

While increasing automobile use and massive transport infrastructure after the 1920s and the 1930s ended with low-density garden suburb developments, such a development schema based on dispersion have turned into sprawl from the early 1970s as a severe form of deconcentration. Almost all developing cities in many countries experienced it at a different degree, with a dissolving continuity of urban fabric. Hegemonic enterprise culture of laissez-faire attitude during the 1980s strengthened such an uncontrolled peripheral development process.

As the extreme version of urban growth, urban sprawl has dominantly taken place in American urban land. Sprawl can be defined as a specific form of suburbanization occurring in extremely low-density mode of development at the far edges of the settled urban areas and dispersed into previously undeveloped land. The process produces poorly planed, land consumptive, automobile-dependant type of urban space (Lincoln Institute of Land Policy, 1995: 4). Definition of growth boundary and the notion of the frame of the reference for development are not indigenous in such a process.

Reel factors and conditions, which encourage urban sprawl, are,

- *'Fragmented' metropolitan areas*, those in which there are various legislative authorities.
- *Spatially expanding metropolitan areas*, in which the rates of population growth and spatial growth are not proportional to each other.
- *Regions where investment is distributed unevenly* -public investment such as schools, sewers and transportation systems and private investments in housing or job creation-
- *Regions that shows disparities in the means of financing essential public services* (education, public safety and infrastructure maintenance)
- *Areas enforcing dependence on the automobile* -low density and separation of land use- (Lincoln Institute of Land Policy, 1995: 5).

land within maximum dispersion.

Figure 5.1: Urban sprawl in the United States and Los Angeles frontier: Encroachment of urban (Source: Urban Task Force, 1999., http://www.photovault.com/Link/Cities/Lake/Angeles/show.asp)

Those factors, mentioned above can be considered as both the result and the reason of urban sprawl within the complex structure of urbanization.

There are two major indicators of urban sprawl:

- *Poor residential /destination accessibility*: Because of the segregation of land uses and scattered land holdings, residents and service providers must pass vacant land to access from

one developed land to another. This spatial factor increases both average travel time and trip length.

- *Lack of functional open space*: Active open spaces cannot be utilized in spread of low-densities, without definitive spatial proximity. In a leapfrog development pattern, there are large undeveloped areas between settlements. Therefore, they are in a functional uncertainty (Ewing, 1997: 109). Farmlands are always subject to be developed or remain as left over spaces.

What makes sprawl type of urban development lowering its density is an asymmetrical relationship between the increases of area and population. In this sort of development pattern, the rate of the acceleration of area growth is much more than that of population growth. For example, while the population of 213 urban settlements in America increased 47% between 1960 and 1990, the urbanized land area increased by 107% in the same period (1000 Friends of Oregon, 2003c). That is the condition of extreme urban sprawl characterized by American urbanization. Continuing dominancy of urban sprawl in America has became one of the major factors of automobile dependency. The averages 750 automobiles per 1.000 inhabitants make U.S. the world's most auto-dependant society. Although, it has less than %5 of world population United States consumes %25 of petroleum-based fossil fuel reserves of the globe, highly because of the energy sensitive urbanization pattern preferred (Cervero, 2001: 15873).

Within a comprehensive analysis of urban sprawl by California Resource Agency, the cost of sprawl is examined with respect to environment, taxpayers, business, residents of new suburbs and central cities. Prominent problems among them are,

- Long-term costs (hidden costs) of taxpayers, maintaining highways to serve distant suburbs. Higher direct business costs and taxes to counterbalance the negative side effects of scattered development.
- Emerging geographical mismatches between labor and jobs, which causes higher labor costs and loss of worker productivity.
- The costs of commuting to work and other destinations for residents of new developments. (Increasing gasoline consumption, time lost etc.)
- Loss of jobs and increasing difficulties to commute suburban jobs for residents of central cities.
- Economic segregation and loss of social stability.
- Economic decline and diminishing of property values in central cities.
- Destroying agricultural infrastructure and productivity in urban fringe.
- Depreciating the ecological diversity in bioregions by development pressure.
- Non-manageable and expensive development of water supply. (California Resource Agency, 1996)

Objections to urban sprawl concentrate on five concerns:

- Efficiency concern: Scatter development causes more infrastructure costs, which can be converted into public costs.
- Equity concern: Middle to high-income families can afford outward housing costs and related commuting costs. Even though, development costs shared by all of society.
- Environmental concern: Low-density dispersed settlement pattern encourages automobile usage and prevents energy savings. It results in loss of prime farmland areas, forests, wetlands and other natural lands.
- Social concern: Its social equations are impoverished social relationship, social alienation and suffering sense of community.
- Aesthetic concerns: Shoving neither urban nor rural values of aestheticism, in an unplanned, monotonous and chaotic visuality. (Bruegmann, 2001: 16088-90)

Contrary, in defense of urban sprawl, it is claimed that sprawl is an urban phenomenon, which increase the quality of life. It is assumed that urban sprawl develops meaningful incentives to create more attractive urban environments. As a 'congestion reduction mechanism', it is the instrument for relieving highway demand of densely developed cities. Additionally, it is supposed as an alternative way of life, which enriches people's spectrum of individual choice. (Lincoln Institute of Land Policy, 1995: 8)

Impacts of low-density development on urban space become realized themselves in counter-relations. As the distance increase, the need for parking spaces increase. Because of increased distances public transport looses its feasibility. Then, walking/cycling options for intra urban transportation become unavailable. In urban areas, vast amount of spaces are allocated for automobile uses. This becomes the main factor of decreasing quality of urban space. (Thompson, 1993)

With regards to the efficiency concern, sprawling and leapfrog developments require more costly investments in infrastructure than more compact developments. High degree dispersion across the land gives rise to longer public roads and water/sewer lines to provide local service. Water and sewer services cover a large portion of the capital costs of a new urban development. Dispersed urban growth pattern can raise that cost item by 20% to 40%. In low-density development, there are fewer dwellings within the acceptable response time for a range of emergency services. That's why rapidly growing, scattered communities often require more emergency services such as fire and police stations. From this viewpoint, public services in low-density can cost twice as much subdivisions as smart growth communities (Livingston et al., 2003: 5-10).

Newman and Kenworthy handle the subject of urban sprawl by defining its driving forces (regulations and planning processes) and results -the factors of unproductive urban economy-. (Newman et al., 1999: 58)

Table 5.1: Possible mechanisms as dynamics and/or outcome of urban sprawl.

Regulations and planning processes that shape urban sprawl
Subsidized road provision
Subsidized water/sewerage provision
Tax intensives on house and land package
Other subsidized infrastructure
URBAN SPRAWL
Waste of public investments-suburbs overcapitalized
Waste of private investment-suburbs over capitalized
Waste of travel time-distances longer than they need to be
External costs- road accidents, smog, noise, loss of land
Ongoing costs-high maintenance of infrastructure
Less private capital for productive purposes
Less public capital for productive purposes
Less Productive Urban Economy

One of the most outstanding counter-arguments against to gigantic and uncontrolled urban growth comes from E. F. Schumacher, with its well-known study of *Small Is Beautiful* (1974). To Schumacher, cheaper transport and emerging non-human energy accelerate the trend of urban growth. (Schumacher, 1974, 57-68).

5.2.2 Energy Use and Urban Form

Focusing of sustainability debates on the problematic of urban form results from the need for reducing the energy demand in urban areas. High-energy consumption and reliance on petrol-dependant motor vehicles seem to be major challenges of cities. Current development forms are in the way of increasing domestic energy consumption and blocking availabilities of energy-efficient transit modes.

Energy crises in the 1970s made the dynamic interaction between energy systems and urban form more clear than before. Since high level of energy dependency illustrated itself in a disturbing manner for most of world cities, it was widely believed that the role of energy use is so strategic for urban welfare. To many, energy was a deterministic factor for urban development. In those years, according to Van Til,

"The shape –and spatial form- *of the future metropolis may take a form determined almost entirely by energy availability: values and preferences may become submerged to necessity as our resource options disappear."* (Van Til, 1979: 321).

Today, there is a reciprocal relationship between land use policies and energy use patterns. They closely determine each other. The nature and availability of energy resources manipulates the space organization of societies. Improving transport technologies and energy supply networks support more extensive growth pattern, spreading radially with decreasing densities. They are the dynamics of

increased personal mobility and release of industry from local constraints. (Owens, 1986: 2) While socio economic factors determine spatial structure, specific conditions of societies, such as geography, resource availability or technology form the characteristics of the use energy, in terms of price, distribution or availability. In such a relational system, energy requirement is determined by the level of social and technical development, socio-behavioral patterns etc. (see: Figure 5.2).

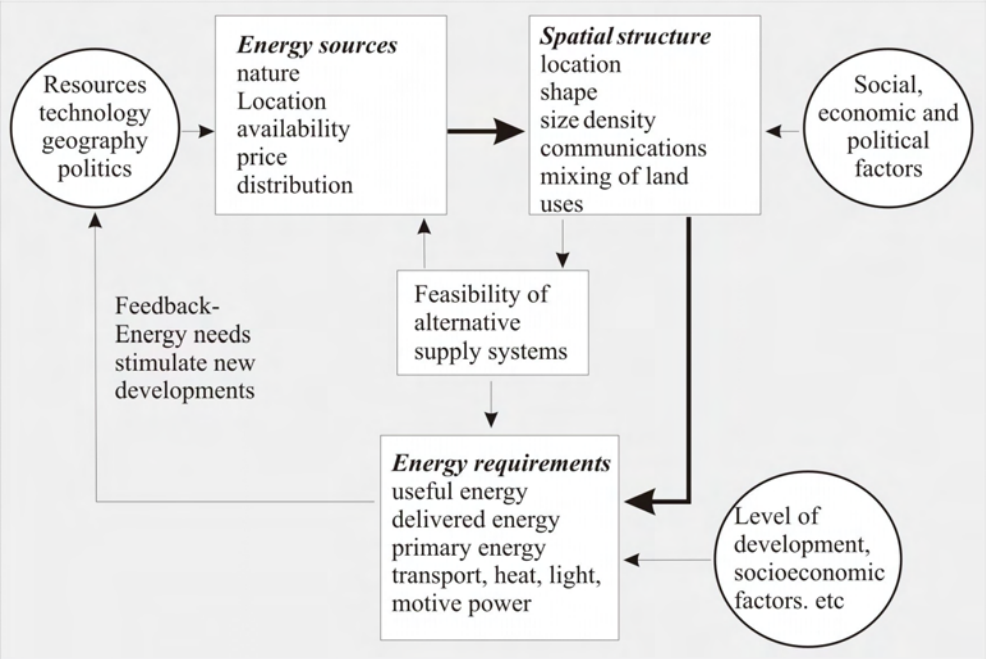


Figure 5.2: The relationship between energy system and spatial structure. (Source: Owens, 1986: 3)

There are two ways of interaction between urban form and energy demand. First, land use pattern is the determinant of energy demand. Especially in the area of transportation and space heating, characteristic of built environment directly influence the level of energy requirements -for example, low-density, segregated suburban typed settlements, which represent more energy sensitive urban patterns-. Second, components of spatial structure, such as density, layout and orientation, are the significant factors for the feasibility of the supply and distribution of alternative energy systems like combined heat and power generation -CHP- (Owens, 1986: 3-4).

Over half of overall energy requirement belongs to urban transportation and space heating. Empirical evidences concludes that energy use in transport has a close relationship with urban physical structure, as well as social and economical factors like income levels, car ownership etc. Since development type and/or pattern predetermine trip ends, it is logical to search particular space organizations producing more efficient trip patterns: shorter trip lengths higher proportion of less energy intensive transport modes (Headicar, 2000: 162). High density urban areas may help to reduce the need to travel

on the condition of the availability of open space. In addition, self-containment by mixed land use is important to prevent long-distance energy intensive mobilities (Banister et al., 1997a).

Without a coordination of urban transportation and land-use issues under one planning/design base - which is urban form- certain problems emerges:

- More distance-intensive interactions in urban areas, increasing commuting distances and decreasing time savings,
- Transport-based unproductive land uses -excessive road and parking spaces- in urban lands of high economic potentials,
- Automobile dependent urban structure, with direct impacts of noise, pollution and functional visual segregation.
- Auto-based urban transportation pattern, making city vulnerable to future energy crises (Scheurer, 2001: 148-150).

In this framework, it is assumed that land-use-free transportation measures are not able to promote more sustainable urban developments. Therefore, six components are be taken into consideration in the studies of urban form:

- Location with respect to existing towns and cities
- Structure of development (size and shape)
- Land-use type
- Clustering/concentration of development
- Land use mix (level and scale of mix)
- Density of development (population and employment

(Stead, Williams, Titheridge, 2000, 175).

From this perspective, urban form can significantly reduce energy consumption, greenhouse gas emissions, travel time/distances and infrastructure costs. It is widely conceived that by (re)structuring urban form adoption of a new travel behavior can be possible. At this point, centralized, high-density city seems to be more sustainable due to its structural character making transit service more efficient and short-distance walking trips more available.

5.3 Compact Urban Form & Sustainability

In Europe, increasing living standards, cheaper energy and technological development in automobile oriented transportation have resulted in extensive decentralization until the mid-1970s. When energy crisis emerged over the world, urban development turned through more densely populated areas in the form of the additions to urban fringe (Orrskog et al., 1992: 117). Those are the years, mid-1980s, compaction of urban form as an alternative against low-density decentralization and urban sprawl.

The drive behind the arguments on compact urban form, which has being turned into a sustainability discourse within last decay, is its relationship between urban form and ecological issues. Snellen, et al. illustrates current relationship between *urban compactness*, related factors (*density* and *mixing of function)* and four major problematic of ecology (see: Table 5.2). This is also the reason why the issue of urbanity and urban development has been central to the theory of sustainable development.

Table 5.2: Possible relationships between urban features and ecological criteria. (Snellen et al., 2000: 62)

Urban Attributes	*Ecological Criteria*			
	Air pollution	**Energy use**	**Potential for use of renewable resources**	**Efficient use of space**
Mixing of functions	*	*	-	-
Density	*	*	*	*
Compactness	*	*	-	*
* a direct relationship expected - no direct relationship expected				

In the framework of urban sustainability, Nijkamp and Perrels define *urban ecology*, as a new discipline with six headlines:

- minimizing space consumption in urban areas,
- minimizing spatial mobility in the urban space by reducing the geographical separation between working , living and facility spaces,
- minimizing private transport,
- minimizing urban energy use (combined heat and power systems, district heating etc.),
- minimizing urban waste,
- favoring the use of new information technology (Nijkamp, 1994: 13).

When we look into the first four heading of urban ecology/sustainability, we can easily perceive the reason why the model of compact city is principally presented as a sustainable urban form in the sustainability literature. It is just because of the inherent features of the compact form. With regard to

sustainable way of urban life, Masnavi relates compact city paradigm with four elements of the quality of life in a positive perspective,

- Good accessibility to facilities- equity in access to the range of facilities and services of the city,
- Reducing need to travel- decreasing journey length by private car,
- Health- improving public life through reducing pollution of emissions from vehicles,
- Social interaction- increasing social contact in frequent used public places (Masnavi, 2000: 65).

From compactionist perspective, compact urban form has a multi-dimensional superiority to assure sustainable urban development. For Rogers, compactness of urban form is the major prerequisite of a sustainable city. The cities, which are compact, polycentric, ecologically aware and based on walking, can be economically strong, well governed and designed. Placing diverse activities make people easily connect and promote social inclusion (Rogers, 1995).

The main arguments for compact urban form can be stated as fallows:

- Reuse of infrastructure and of previously used urban land: upgrading of existing urban land and conservation of the countryside,
- Less energy consumption: lower fuel and heating costs as a result of intense urban form,
- Availability of affordable public transport: Increased overall accessibility and mobility, reduced traffic volumes, related pollution and risk of death and injury in traffic,
- Viability of mixed use as a result of increased densities: reduced travel distances, efficient way of accessing local facilities,
- The potential of social mix when supported by a range of dwelling and tenure types,
- An efficient milieu for businessmen and services by concentration of local activities in communities (Frey, 1999: 24-25).

Emphasizing the environmentally negative features of low-density urban development legitimizes urban compactness. Haughton and Hunter summarize the negative features of low-density sprawling development patterns:

- Development in expense of consumption of farmlands, forests and wildlife areas.
- Increased transport oriented energy use and air pollution result from reduced walking and cycling, which are nature-friendly mode of transportation.
- Increased domestic energy consumption of low-density detached development with poor thermal capabilities comparing compact hosing forms.
- Higher petrol consumption per capita and increasing volumes of car emission.

- Inadequate rates of recycling, due to higher costs of collection services.
- Increased area of paved and built-on surfaces.
- Relatively high storm water pollution (Haughton et al., 1994: 85).

From the definitions and pre-determined criteria of sustainable city a number of tendencies can be inferred in terms of compact urban form. To Dumreicher et al. ,

" The definition suggests a dense, compact city with a dynamic balance between community and privacy. It suggests a community rich in form, public space and individual and collective opportunities. It suggests a city with a strong sense of itself as a place, a clear and defined form and common destiny… Because of the mechanistic ways in which it separated functions and activities, it reinforced the economic tendencies toward unsustainability. In contrast, the sustainable city will demand a dense, diverse, highly integrated urban fabric. " (Dumreicher et al., 2000 : 295, 298).

5.3.1 Problematic Themes Related With Compact Urban Form

Because of the fact that urban sustainability covers a wide range of problematic areas, urban compactness is in a close relationship with a series of current environmental, economic and social issues.

5.3.1.1 Preservation of Countryside

The promotion of compact urban development is conceived as a tool for preservation of open spaces in urban periphery and ensuring agricultural and natural assets by limiting urban encroachment with urban consolidation policies (Thomas et al., 2000).

To Urban Task Force, the countryside can only retain its inherent features if the city is developed in compact form, and limits containing urban sprawl. (Urban Task Force, 1999: 36) Encouragement of more compact growth patterns would reduce the pressure on farmlands and open spaces, which are subject to urban development. Practically, such a policy would be successful in case of vacant lands increase the use-value of preserved land. As a successful example to the compactionist spatial planning policies, in Green Heart, the Netherlands' urban policy has evolved into Delta Metropolis, where arable lands, forests, lakes and canals are re-appreciated as open spaces -i.e. recreational areas- in an urban context (Van Der Valk, 2002: 209).

According to the researches of The Denver Regional Council Governments (DRCOG), which has tried to adopt compact urbanization policies for Denver Region since 1997, it is estimated that compact development pattern could save 69% of the regions farmland over the next twenty years (Livington et al., 2003: 5).

In his classical article on urban sprawl, Ewing addresses compact development policies to prevent the loss of environmentally sensitive lands as a result of market failure in urban development. To him, malfunctions of market mechanism result from three dynamics:

- Up to three miles from urbanizing area, urban spillover effects –externalities- make adjacent agricultural activity less profitable and results in disinvestments.
- Uncertain conditions -called as "impermanence syndrome"- causing cultivators to give up agricultural operations in a wait for conversion of rural land to urban uses.
- Increasing public subsidies and environmental costs resulting from loss of prime farmland to urbanization (Ewing, 1997: 116).

5.3.1.2 Infrastructure and Service Costs

Compact urban development is claimed to be a tool for reducing development costs of urban infrastructure and transportation for new development sites. Principally, compact neighborhoods require fewer linear lengths of utility lines, such as water, sewer, electricity, phone service etc., than dispersed communities. This assumption partially confirms by Mascaro. To him, when population density increases, the share of pavement, drainage, sewage and public lighting increase in total network cost, while the share of water, gas and electricity supplies decreases. According to his findings, overall cost of network per dwelling decreases with increasing density measure (Mascaro, 1987 cited in Acioly et al., 1996: 15).

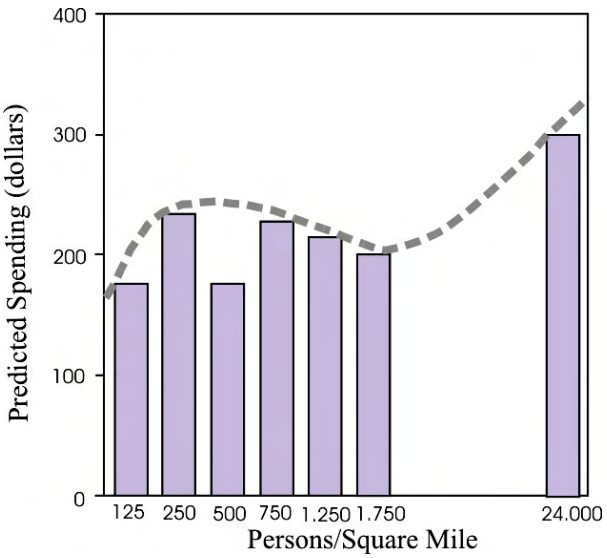


Figure 5.3: Per capita infrastructure costs at different density levels. (Source: Ewing, 1997: 115)

Ewing specifies infrastructure cost savings in a definite range of density increases. Referring former studies on U.S cities he points out that within the normal range of urban densities, infrastructure costs per capita simultaneously increase as densities rise. This prolongs until a break where cost function starts to raise while density level increases. The main factors behind the increase in infrastructure costs at low densities are the spread of septic systems, open drainages and cross sections. Whereas at very high densities 'harshness' of built environment, special needs of high-rise structures cause an increase in cost item (Ewing, 1997: 117).

Compact development patterns and infill developments can reduce local infrastructure needs to a large extent by taking the advantage of utilizing existing infrastructure. In general, the cost of building local roads is estimated to be 25% lower in compactly developed areas. Hence, clustering development can create a %50 to 75% reduction in road length (Livington et al., 2003: 10). The comparative analysis, conducted by DRCOG, shows that compact development represents significant cost savings in infrastructure, agricultural land woodland and wildlife habitat comparing with a dispersed, corridor or satellite-type development patterns (see: Table 5.3).

Table 5.3: Capital costs of infrastructure and land savings in different development scenarios for Denver Metro Region, 2000-2020 (Source: Livingston et al., 2003: 13)

Impact	**Dispersed**	**Compact**	**Corridor**	**Satellite**
Capital Costs (roads and utilities)	$5.4 billion	$1.1 billion	$1.6 billion	$2.0 billion
Savings (compared to dispersed)	0%	80%	70%	63%
Land Consumed (square miles)				
Total Urbanized Land	850	650	750	750
Potentially Prime Agricultural	100.8	42.8	52.7	66.3
Wildlife Habitat	181.8	71.8	97.4	109.7
Woodland	28.4	6.6.	15.7	14.1
Infrastructure Cost/Acre	$9,926	$2,644	$3,333	$4,166

Another, evidence from the study of an impact assessment on savings in plan over trend development for New Jersey indicates that a planned development on more compact urban form consumes 20-45 percent less land than urban sprawl. Similarly, infrastructure costs are measured lower in controlled development pattern: 15-25% less for local roads and 7-15% percent less for water and sewer lines (Lincoln Institute of Land Policy, 1995: 9).

Furthermore, compact formed urban pattern serves a definite advantage for economizing local service provisions like reduced costs of street lighting, road space coverage, secondary transport services - feeder buses, school services etc.- and collection of solid disposal. (Haughton, 1994: 84) Each of service items, as public services, lead to considerable amount of fix costs as a burden for the fiscal

capacities of local authorities. Researches on the issue for Paris metropolitan area indicates that the dispersed urban development patterns of the outer suburbs are two to three times more costly to serve than conurbation centers, which have relatively denser urban forms. Scattering population, which offers an infrequent service, is a handicap for bus services (Vivier, 1999: 5).

5.3.1.3 Social Sustainability

With respect to social sustainability, planned compactness of urban areas is strongly related with social equity by promoting much more benefits for low-income groups. After the research conducted in medium-sized cities by Burton, she concludes that compact city serves a series of positive indicators for economically disadvantaged social groups:

- Better access to facilities: Reduced need for car ownership with decreasing distances to urban activities.
- Easier access to open countryside beyond city boundaries.
- Better job accessibility: Potential to reduce the separation between home and work, thus less time and money spent on commuting,
- Better public transport.
- Greater opportunities for walking and cycling as equitable alternative to car-led sprawl.
- Reduced domestic living space: Decreased amount of gap between low and high-income groups within urban area.
- Reduced crime: Controlled urban crime in inner city areas caused by the flight of middle class from city centers to peripheral low-cost housing estates.
- Lower levels of social segregation: Reduced inner-city decays and segregation problems resulting from suburban sprawl (Burton, 2000).

On the other hand, Burton also mentions the probable results of compact cities like lack of affordable housing -urban land becomes scarce and therefore more expensive-, poorer health conditions –density pathology- and poorer access to green space used for inner city densification (Ibid). From the same perspective, these conditions can be regarded as the problematic of social sustainability.

5.3.1.4 Ecology

Ecologically, findings in urban ecology innovations indicate that there is no increase in ecological activities in low-density areas. Whereas the most influential examples of urban ecology, such as recycling, solar design, storm water retention or permaculture* are activated in denser developments like inner city areas or in relatively compact rural communities (Newman, 2001: 11481).

* Land use, which integrates human dwellings, microclimate, annual and perennial plants, and water management into stable communities.

Actually, dense urban settlements produce less pollution per person, but concentration of people and activities within a limited space also results in concentration of nuisances and makes it more perceivable by residents (Fouchier, 2000: 246). That is the reason why, compact development is not commonly perceived as eco-friendly development alternative. Concerning ecology, compact development provides less water-dependent urban conditions, thus preserving water resources. Compact planned developments can use up to %35 less water than low-density settlements, mostly because of reduced water use for landscaping (Livington et al., 2003: 5).

5.3.1.5 Domestic Energy Use

Compact settlement patterns opens up the opportunity to combine heat and power systems to enable energy savings. Higher density is more energy efficient than low-densities of standalone space structures. Hence, there is less surface area per home for heat to escape from. To ensure energy efficiency for heating systems, compactness can be formed in the densities of 50 homes and 120 workplaces per hectare. Thus, any district boiler system from central point would be viable and feasible (Walker, 2003: 42).

5.3.2 Reducing Energy Demand in Urban Mobility Through Compact Urban Form

In industrialized societies, pattern of energy usage averagely allocates one-fifth of the total to household uses -heating and cooling-, one fourth of the total to transportation and remainder to industrial uses. Among them, transformation is the most critical one for any savings by alternative urban development pattern. Considering its relative high elasticity, transportation can be taken as a major issue for controlling energy policies by urbanization (Van Til, 1979: 322).

Linking urban form and the problematic of energy usage directs researchers to the model of compact urban form, today. Relating the degree of energy use to human environment in various scales, Owens emphasizes the indirect effects of urban compactness:

- The shape of the urban area can lead to variations in energy demand at the range of 20%.
- By means of intensification and centralization of trip destinations, with facilitating transit systems, energy savings of 20% can be achieved.
- High density and mixed land uses -compact urban form- enables combined heat and power systems, which increases the efficiency of domestic energy use by 100% (Owens, 1986: 92).

In developed countries, compact city policies are dominantly rationalized on the problematic of energy demand, especially in the sector of transportation.

Since the share of carbon dioxide emission by transportation is relatively high in developed and developing countries -in the UK it is 24% in 1988 (Rickaby et al., 1992: 183)-, researches have been focused on settlement types as the symptoms of the problem. There are four approaches developed for the assessment of the effects of settlement patterns on energy use in transportation. To these approaches, energy use is assumed to be a function of,

- *Modal shares, journey lengths and vehicle occupancy (analyzed with travel survey data)*
- *Modal shares, trip distances and settlement types (analyzed with household data collected)*
- *Density and intensity/ diversity of land use (analyzed with the complementary data on fuel use and urban density)*
- *Containment for the journey to work (analyzed with the in/outflow commuting data)* (Banister, 1992: 161-62).

Studies on urban compaction and its relevance to the problematic of energy use are mostly represented by the third approach, which takes three components of compact urban form into consideration.

When we consider the factor of centrality as a fourth dimension, Cervero's conceptualization on the relationship between urbanization and travel gains importance. Here, while compact urban forms in the concentrated structure are composed of mono-centric public transit networks, polycentric metropolises work with more flexible public transport modes. In the extreme side of compactness, non-centric/dispersed space structure stands on non-transit modes/auto-mobility (Cervero, 2001: 15876).

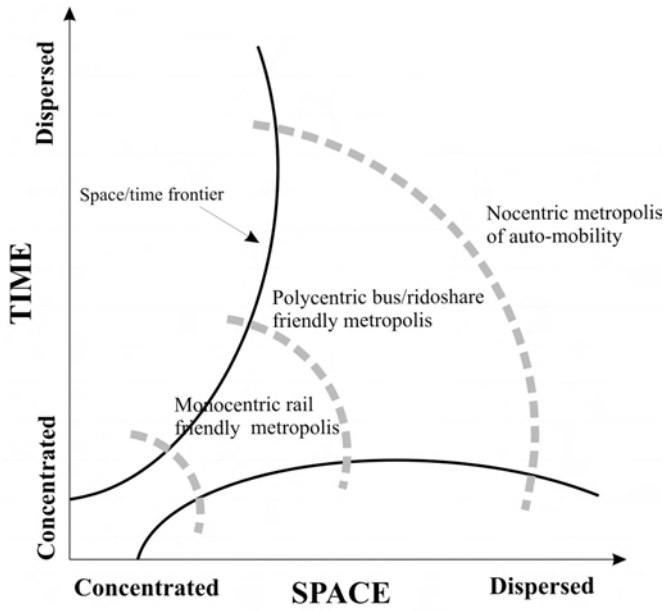


Figure 5.4: Space/time continuum of urbanization and travel inbetween concentration and dispersion. (Giuliano, 2001: 15876)

As the most important part of the measures of energy reduction, two factors are emphasized to reduce fuel consumption: The first one is the mode of transport used for journeys. The focus here is on transit, trips on foot and by cycle rather than private-vehicle use. Second one is the length of journeys, particularly by car (Farthing et al., 1996: 181).

The presented suggestion, which correlates urban densities and travel behavior, is that high urban densities as a variable of urban compactness contribute reduction in travel distances and assist use of public transport with lower fuel consumption per capita.

To Banister, prominent determinant factor on energy use is urban density. As the density of development increases, the average trip length, the use of car and the distance traveled are reduced. His empirical study for British cities indicates that increases in density over eight years have resulted in a decrease in the number of trips by car from 72% to 52%. In addition, the greatest growth in distance traveled by car took place in low-density areas. (Banister, 1997b: 443).

The reason why density reduces travel need, principally remains in the basic characteristics of high-density development:

- Increases in the range of opportunities of different sorts which can be accessed within a given travel distance and convenient walking time,
- Increases in the scale and range of services which locates within particular district, thus decreasing need to travel elsewhere,
- The formation of densities of 'trip ends' that are high enough to support public transport,
- Enforcement of the burdens on the ownership and use of private vehicle (Barrett, 1996: 173).

In California, policies for creating more compact settlements by doubling housing density has resulted in a reduction of vehicle travel by 20 to 30 percent (Smart Growth Network, 2002: 10). Although total travel distances appear to be higher in lower density areas -people in lowest-density category make trips twice as many kilometers compared to people in high-density areas-, the frequency of travel increases with rising densities. On the other hand, increasing frequency is balanced with reduced trip distances in high-density urban areas (Van Diepen, 2000: 253).

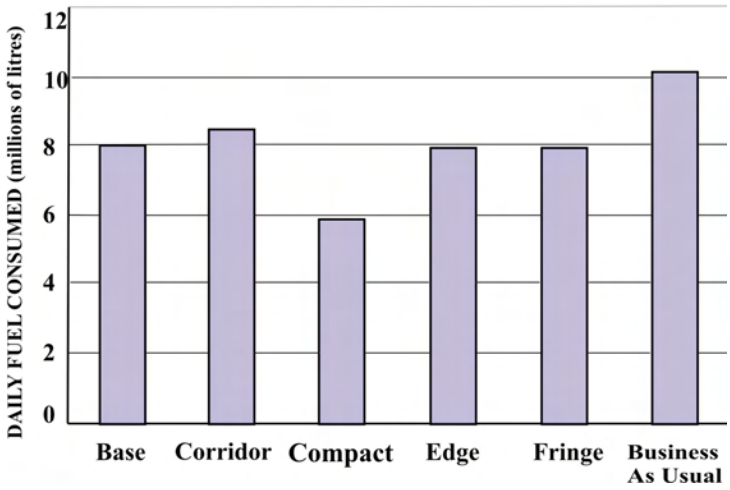


Figure 5.5: Daily transport fuel consumption for base and five development scenarios for Melbourne Metropolitan area. (Source Newton, 2000: 51)

By employing the integrated land-use-transport-emission model, Newton measures the environmental performance of five development schemas -which were quoted above- and makes a comparison among them. (see: Figure 5.5) After modeling, its concluded that the compact urban form is the most fuel efficient of all urban forms with 43% less fuel consumption. It is due to greater use of public transport and fewer vehicle kilometers traveled, compared with the other models, which are more auto-dependant ones (Newton, 2000: 51).

Table 5.4: Minimum residential densities for types of transit services. –Originally measures on acre are transformed into those of hectare- (Source: (Pushkarev et al., 1977 cited in (Mineta Transportation Institute, 2001: 11, 13)

Transit Service Type	*Dwelling units per hectare*
Bus-minimum service	10
Bus- intermediate service	18
Bus- frequent service	38
Light Rail	23
Rapid Transit	30

There is a direct relationship between use of public transit systems and urban compactness. Principally, dense and compact urban settlement makes mass transit more feasible with regards to operation costs. A clear link between increased residential density and transit use is subject to search. To Cervero, statistical comparisons between cities suggest that every %10 increase in population and employment densities give way between 5 and 8 percent increase in transit ridership, controlling other factors like income, parking supply etc.- (Cervero, 1998, 72). Similarly, Pushkarev and Zupan

conclude that sufficient rail transit demand requires residential densities at an average of 30 dwelling units per hectare in connection to a downtown. They note that residential densities between 18 and 45 units per hectare were necessary to sustain significant transit use. With a density increase from 7 to 30 dwelling units, transit demand roughly triples and a sharp reduction in auto travel is observed (Pushkarev et al., 1977 cited in (Mineta Transportation Institute, 2001: 11, 13). These measures indicate the importance of compact urban form to reduce gasoline consumption per capita via public transportation.

To the study findings of Cervero et al., each combination of 3D factors –density, diversity and design- has distinct types of effects on travel demand by addressing urban compactness:

- Intensity and pedestrian quality factors of dense and pedestrian-oriented neighborhoods are associated with choosing shared-ride, transit and non-motorized modes for non-work travel.
- Intensity and walking quality factors are strong indicators for non-personal vehicle modes of travel (public transportation).
- Density has the strongest influence on personal work trips.
- Overall impact of diversity on travel demand is stronger than that of density.
- Synergy of the 3Ds in combination -in a compact form- is likely to give way to more substantial impacts (Cervero et al., 1997: 211-217).

Thus, urban policies to integrate public transit system, as an energy efficient transport mode, should be combined with spatial policies on urban form. According to the research, conducted by Fouchier, which covers A certain correlation between high-density and households without car has been stated in 31 big cities in the world. Families, which are not car owner, range from 1/10 in the least dense to 6/10 in the densest urban areas (Fouchier, 2000: 242). This is the confirmation of the possibility provided by density for less car usage through urban society.

From the diagram produced by Livingston et al, it is recognized that there is a diverse relationship between urban compactness and automobile use, while number of daily trips by transit and on foot increases as household densities increase (see: Table 5.5).

Table 5.5: Influence of the density factor of built environment on modes of transportation in American cities. (Source: Livingston et al., 2003: 23)

		Average Daily Trips per Household		
Neighborhood Type	**Households per Hectare**	**Automobile**	**Transit**	**Walking**
Conventional Suburb	5-12	5.9	0.2	0.5
New Urban or Traditional Suburb	12-25	5.0	0.3	0.6
Mixed Density, Apartments, Townhouses	25-60	3.8	0.8	0.9
Town Center, Urban	50-125	2.9	1.3	1.4

In efficiency term, one of the most complicated studies on development pattern belongs to Rickaby. He evaluates the development options and energy scenarios on a representative settlement model by means of combining land-use, transport and energy-evaluation model. Six compared configurations, in comparison are based on concentration and dispersion:

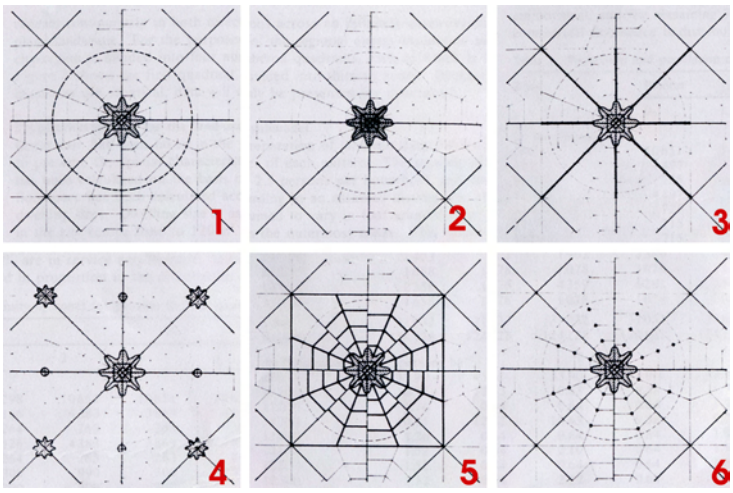


Figure 5.6: Six settlement patterns in different degree of concentration. (Rickaby, 1987: 195)

1. Existing pattern
2. Concentrated-nucleated -relocation of central urban area with density of 33.9-45.5 p/ha-
3. Concentrated-linear -ribbon development radiating from urban area with density of 16.96 p/ha-
4. Dispersed-nucleated -primary and secondary satellite towns with density of 33.9 p/ha and 28.9 p/ha-

5. Dispersed-linear -ribbon development along minor rural roads with density of 10.96 p/ha-

6. Dispersed nucleated -redistribution of population to twenty-four small villages with density of 29 p/ha- (Rickaby, 1987).

It's concluded from the model findings that the second -*concentrate-nucleated*- and sixth -*dispersed-nucleated*- configurations are the most fuel-efficient models with the rates of 23% and %21. Here, *concentrated-nucleated* provides moderate costs in lost land-use benefits -more expensive accommodation- but increased transport benefits with improved accessibility. On the other hand, *dispersed nucleated (village)* model provides increased fuel savings because of reduced traffic congestion and greater availability of accommodation comparing with second alternative (Rickaby, 1987: 217-19). Despite the fact that Rickaby's addressing through concentrated-nucleated model, which is parallel to compact city model, *dispersed nucleated (village)* which is structured on non-compact scattered pattern is in contradiction with compact city approach. Besides, this partial contradiction is limited in terms of energy efficiency.

If we classify sustainability into 'sub-sustainabilities', *sustainable mobility* becomes the most consistent problematic with urban compactness. Central to the current compact city debate is the studies of Australian academics P. W. G. Newman and J. R. Kenworthy (Newman et al., 1989). Their empirical evidence was established on the correlation between urban density and level of automobile dependency. The four critical factors for car dependency here are population and job density, centrality, road supply and parking space provision. Database of thirty-two cities through the world enables them compare different density degrees in the World.

With 'global' comparison, they find a strong consistency with higher densities and lower fuel consumption within inverse relationship. The cities with the lowest densities -Australian and the US cities- are associated with higher travel demand, which is strongly dominated by automobile. In contrast, European and Asian Cities -like Hong Kong- with high density and large transit/non-motorized systems result in lower travel demand and fuel-efficiency. At the end of the research, they conclude that the provision of economic, social and environmental benefits of reducing fuel consumption can be obtained by promoting the policies of urban compaction and public transit. With regard to car-dependency, travel choices in traditionally dense cities are more balanced than those in low-density cities. Very low densities reflect almost the entire reliance on cars and significantly exclude any public transport system, while very high-density urban forms have opposite characteristics.

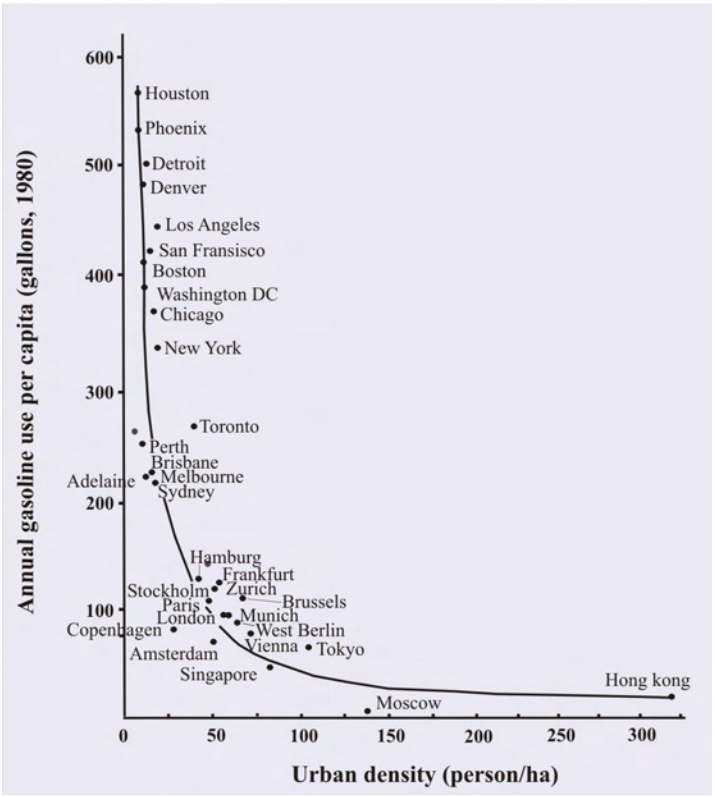


Figure 5.7: Gasoline consumption per capita versus urban population densities in 32 world cities. (Source: Newman et al., 1989: 31)

At the last stage, Newman and Kenworthy correlate density data with the data of travel characteristics. They assert that the reason why European cities have less than half the car use of U.S. cities is shorter distances. Therefore, when compared to urban Europeans, and Asians, people in urban America are almost 2.5 to 6 times more mobile in the cars. Average travel distances for density categories are,

- As low-density cities, North America –the U.S., Canada- and Australia average 14.7 and 12.6 kilometers.
- As the medium density cities, Europe's average is 10.0 kilometers.
- As high-density cities, Asia average 7.9 kilometers (Newman et al., 1989: 103).

To understand the degree of mobility in the U.S. cities comparisons can be illustrative. The U.S. cities are some 5 times higher in their total per capita use of transport energy than the Asian cities, which have the highest urban densities in range. Compared to wealthier European cities, U.S cities use 2.5 times more transport energy in last the decade of the 1990s. Furthermore, 86 percent of total transport energy use is based on gasoline consumption, while only 0.3 percent is electricity. For European cities, these ratios decrease to 67 percent for gasoline use and average 49 percent for Asian cities. In

overall, gasoline-oriented cities are intense energy users, whereas cities utilizing any significant level of electricity by public transport are low-energy users (Newman et al., 1999: 69-73).

To evaluate urban densities differing city-to-city, generally accepted values of optimal densities would be beneficial.

Table 5.6: Optimal urban densities (Source: Fulford, 1996: 130)

	GRD	NRD	Source
Public transport	30-4	90-120	Newman and Kenworthy (1989)
Walking	100	300	Newman and Kenworthy (1989)
Sustainable Urban		250-300	Friends of Earth
Central/Accessible Urban		up to 370	Friends of Earth

GRD (Gross Residential Density): population divided by geographical area
NRD (Net Residential Density): excludes open spaces and non-residential land

The critical question here is whether compactness of urban form or socio-economic conditions of urban societies is the principle factor for automobile dependency. Newman and Kenworthy argue that there is no clear and regular relationship between economic wealth and car use. Economic factors are not able to explain the foremost variations in per capita gasoline use between the cities. In Europe, car use measure is 2.4 times less than that of the U.S. cities, though European average income per capita is more than that in the U.S. Furthermore, ten times less wealthy developing Asian cities have three times higher car use than wealthier Asian cities. Since economic factors explain at most about half of the differences in gasoline consumption, purely economic rationalization of transportation matters are insufficient. Thus, infrastructure and urban form should be prominently taken into account to evaluate travel behaviors (Newman et al., 2000: 111).

The findings of Ingram et al. support the diagnosis of Newman et al. By examining different 50 countries and 35 urban areas, they claim that road provision is negatively associated with urban population density. They suggest that holding everything else constant; the countries with lower population density have higher levels of vehicle ownership. Additionally, low overall population density may increase average trip lengths and motorization. Related to this fact, dispersed urban land use patterns physically promote an excessive car use (Ingram et al., 1997).

according to Stead, socio-economic characteristics usually explain more of the variation in urban travel pattern than urban form does. It is estimated that, socio-economic structure on average explains half of the variation in travel distance per person. Characteristics of urban form -including compactness- often only explain about one third of the variation in travel distances (Stead et al., 2000: 183). Gordon and Richardson's claim is complementary with that of Stead. To them, attributing the

variations in petrol consumption among cities to physical characteristics of urban form is a simplistic point of view. Instead, it is more accurate to emphasize variations in life-styles and travel behaviors, which are disregarded in analyses. (Gordon et. al, 1989).

A contribution to the debate comes from Gordon and Richardson with a counter-view. As free-marketers and sprawl apologists, they criticize Newman and Kenworthy's suggestions. According to their findings, commuting distances in the U.S. have tended to remain constant or fall in recent years, when decentralization has been going on at the same time. The rationale behind this tendency is the coordination between the relocation of people and jobs. Hence, most of the work and non-work trips are made between suburb to suburb, rather than suburbs to old city centers (Gordon, et al., 1989; Gordon et al., 1991).

Levinson and Kumar support this idea with their findings that travel time also remained constant as a consequence of rational location preferences of people in urban area. (Levinson & Kumar, 1994) In addition, Gomez-Ibanez finds explanation of urban travel pattern with one variable of density naïve and incomplete. For him, household incomes and gasoline price are also important determinant for travel behavioral pattern in cities (Gomez-Ibanez, 1991).

To Hall, the issue of urban structure should be much more focused for travel distances and model splits than the issue of urban densities. Therefore, solely focusing on urban densities for any solution remains naïve. He also points out the relevance of compact city arguments by pronouncing prevailing trend of urban development, that the substantial proportion of future hosing development will take place outside of existing urban boundaries. To him, dealing with the question of future urban growth simply by addressing high-density development could not be a realistic approach. Thus, he presents two possible alternatives: One is new settlement option building up strong employment centers in the outer areas of the sprawling cities. Second one is building up existing small and medium sized towns in the surrounding existing cities (Hall, 1991: 350).

As the response to critiques, Newman and Kenworthy emphasize the vital role of planning as producing policies for reducing urban energy use. For them, in the conditions that governments do not tend to conduct economic measures and interventions price mechanisms, land use planning gains importance to give car-dependant urban life a chance. Huge variation of gasoline use among selected thirty-one cities cannot be simply explained by income and prices. Hence, the gasoline use ratio of European cities and U.S. cities is four and a half, where there is no vast difference in incomes per capita. In that circumstance, they describe their stance by asking such a question: *"Do transport and land use planners just sit back and allow increasing incomes and falling gasoline prices decide how a city should be?* (Newman & Kenworthy, 1992). Support to this and former argument of Australian academics comes from D. Herskowitz and L. S. Bourne. According to them, current endorsement of urban dispersal will end up with inefficient and socially inequitable urban forms in future (Herskowitz, 1992, Bourne, 1992).

According to empirical findings of Phan Man and Senior (Phan Van et al., 2000), car use for commuting declines as land use mix increases, yet higher shopping frequencies are associated with greater land use mix. An increase in trip frequency should be regarded positively within a compact structure. Probable land use mix occurs in a certain spatial proximity and it encourages non-auto travels for the trips. On the other hand, the successes of mixed land use for the manipulation of travel patterns highly depend on overall level of fuel costs. If tendency to travel is high with low fuel costs, mixed land-use will be less effective to reduce mobility than the density factor. Conversely, if local economic conditions do not support travel propensities with high oil prices, then mixed land use policies would be complementary by facilitating more localized travel (Breheny, 1992c: 150).

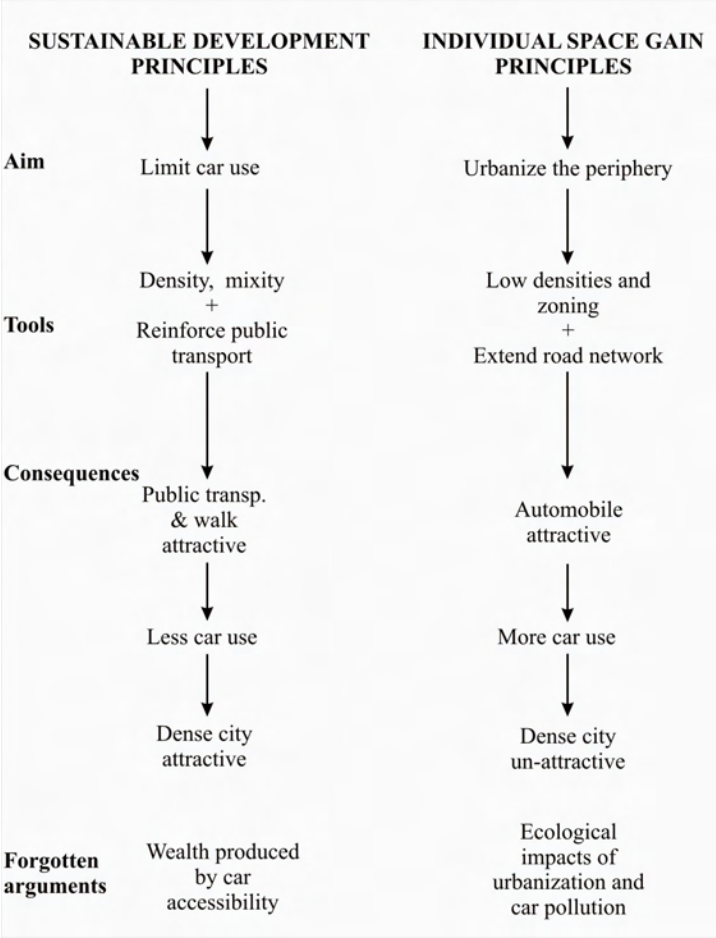


Figure 5.8: Comparision of principle urban planning approaches on urban mobility and development policies. (Source: Fouchier, 2000: 249)

Related with the sustainability debates quoted above, contemporary 'philosophies' of urban planning can be classified into two approaches: Those, based on sustainability principles and those, directed by individual space gain principles (Fouchier, 2000: 249).

CHAPTER 6

CONTEMPORARY MODELS & APPROACHES ON URBAN COMPACTNESS

In this chapter, the arguments for compact urban form are categorized as the contemporary models and approaches. These approaches are examined by a set of criteria, which are settlement pattern, transport paradigm and policies. This section of the study is ended by the critiques towards those arguments for urban compactness. Methodological, ideological, political and technical-based critiques are aimed to be beneficial to recognize the weaknesses of compactionist models.

Spatial pattern of urban compactness is a key problem of the issue. Actually, it is the problematic that designates differentiation points of compactionist approaches. In this sense, the structure of urban compactness becomes the main consideration of contemporary compactionist approaches. Compact urban form can also planned in different structural layouts at macro scale. The determination of different compactness approaches depends on the specific socio-economic features of the societies, the planning system of countries and the urban traditions created over years.

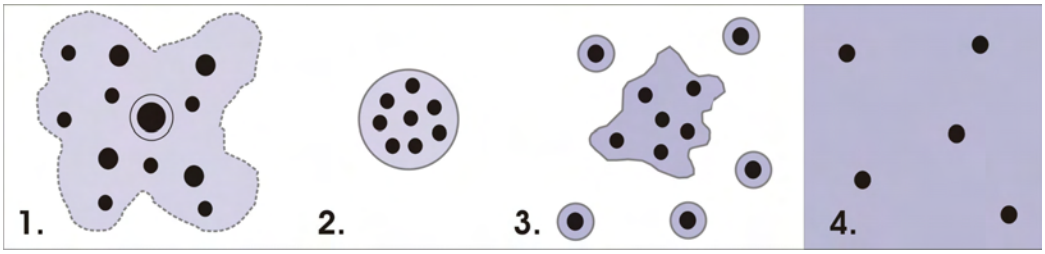


Figure 6.1: Conceptualization of urban development patterns within different configuration of concentration. (Source: Haughton et al., 1994: 288)

To conceptualize the compact urban form(s), Haughton and Hunter illustrate four different diagrammatic schema, which are *'balanced' regional hierarchy (1) concentrated center (2), concentrated decentralization (3), and deconcentrated development. (4)* (Haughton et al., 1994: 288).

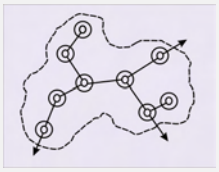
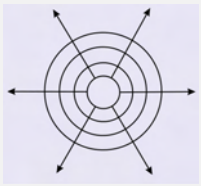
From this point of view, the classification of Ingerson should be taken as a complementary framework on alternative development patterns at macro scale. Those all directly give reference to the compactness of urban form at mezzo scale, as well.

Table 6.1: Alternative development patterns and their factor intensives. (Ingerson, 1995: 5 cited in Lincoln Institute of Land Policy, 1995: 19)

	Growth Management	**Residential Pattern**	**Transportation**	**Job Location**
Dominant Vision: Unlimited Low-density growth	Markets allocate housing and jobs in accord with local zoning and building codes.	Owner-occupied, single family detached homes	Private automobile	Low-rise workplaces
Alternative_1 Limited-spread Mixed-density Growth	Semi-permeable urban growth boundary	Clusters of high-density housing amid larger areas of low density housing	Transit use encouraged	Voluntary concentration of jobs in designated nodes
Alternative_2 New Communities & Greenbelts	Growth boundaries for designated corridors, new towns and metro area	Similar to Alternative_1 but with housing outside urban boundary clustered in relatively high-density new communities.	Emphasis on mass transit	Regulations and incentives help to concentrate jobs in new centers
Alternative_3 Bounded High-density Growth	Strongly enforced growth boundary and job location planning with both housing and transit boundaries	Almost all growth occurs as densification of urban core	Heavy reliance on mass transit	Regulations force new jobs into urban core

The diagram gives out a set of clues, which can be generalized on the issue of urban form. This framework can also provide a base for a systematization of different approaches towards compact urban form. Apart from the firs development pattern (referring 4th concept of Haughton et al.), which is presented as the 'dominant vision' for American urbanism, based on deconcentration, other three schemas have distinct compactness compositions at macro level. In this framework, the first alternative represents the *smart growth* approach - a balanced regional hierarchy of settlements-, second one coincides with *concentrated decentralization* (3rd schema of Haughton et al.) and third one refers to *compact city* approach (2nd schema).

Table 6.2: Urban future approaches of urban compactness. (Source: Scheurer, 2001: 206)

Urban Future Approaches	 **Smart Growth**	 **Core/Compact City**	 **Concentrated Decentralization**
Settlement Pattern	○ Dispersed and compact ○ Hierarchical densities ○ Polycentric ○ Fine-grained functional mix	○ Compact ○ High-densities ○ Concentric and polycentric ○ Maximized functional hybridization	○ Dispersed and compact ○ Varying densities ○ Decentralized and polycentric ○ Functional mix both coarse and fine-grained
Transport Paradigm	○ Fixed and flexible public transit ○ Walking and cycling ○ Taming of automobile but no restriction	○ Fixed public transit ○ Walking and cycling ○ Automobile restriction (Essential)	○ Fixed and flexible public transit ○ Walking and cycling ○ Automobile restriction (where feasible)
Policy	○ Strengthen and create local centers ○ Apply growth boundaries ○ Establish strategic public transit system ○ Housing Choices	○ Revitalize and densify urban and regional centers ○ Apply growth boundaries and dismantle some sprawl ○ Improve strategic public transit system ○ Restrict car use and access	○ Take development pressures from centers ○ Functionally enrich periphery ○ Reconcile urbanized land and interspersed nature

In this framework, the models on compact urban form, whose distinguished features are itemized in Table 6.2, can be categorized in three:

- Core/Compact City
- Concentrated Decentralization (Dispersal Pragmatism)
- Smart Growth

6.1 Core/Compact City

Functional integrity and compactness of urban form, is the most authentic contribution of European urbanization to the urban history. When post-war prosperity was to be lost, perspectives have begun to change critically in most European countries. Emerging thoughts in favor of *'growth within'* became policy frame for compact city model. Actually, emerge of compact city as an urban development model coincidence with the years of late 1970s, when central cities had lost population in post-war years and fiscal crises arose for many local governments in Europe (Audirac, 1990: 4).

The first influential call for compact city model came from the Commission of European Community in 1990, by the report, 'Green Paper on the Urban Environment'. With this declaration, it is argued the production of intensive settlements means also the (re)creation of innovative, culturally rich and high quality urban milieus. Thus, all future development should take place within existing boundaries of cities by containment policies. (CEC, 1990) It can also be thought as a call for the European tradition of urban compactness.

Different from other approaches, the European practice on compact city does not offer any comprehensive structural transformation. Rather, internal regulations and managerial policies, such as urban infills, reducing automobile space, constrain car-ownership etc. are preferred to enhance urban compactness (Scheurer, 2001: 203).

According to the model, existing built environment is the resource of future development. There are two major development scenarios:

- Confining all new development within existing urban area and prohibiting them in rural hinterland.
- Limited peripheral expansion by accommodating further growth within a limited urban expansion area on the edge (Brown, 1998).

To promote substantial savings in travel demand by mixture of residential and non-residential uses, ex-urban open spaces are rehabilitated and redeveloped in high-densities through concentration. Compact city approach coincidence with 'the core city' model of Lynch among his five conceptual models of urban form.[5] As the extreme form of urban compactness, compact city approach -core city alternative- is based on the development model of continuous body from core to edge with very high overall density -about 350 pph- and an intensified center. The density of different sections within urban fabric may vary from high density at the center to medium in its border. It strongly resembles European medieval city form. Extension of built-up area is relatively limited when comparing with other fragmented urban forms. Green spaces within urban fabric are small and in the form of local

[5] Lynch's conceptualization of urban form is based on five development schemas: *The dispersed sheet, the galaxy of settlements, the core city, the urban city and the ring*. (see: Lynch, K., 1996: 47-64)

pockets. Housing forms are predominantly based on multi-storey apartments rather than single-family detached houses (Lynch, 1996: 53-55). Specified transport system of compact city almost entirely depends on public transport rather than private vehicles. In this sense, it provides a supreme alternative to auto-dependant urban form models. Compactness of urban form and concentration of population provides availability for mixed-land use pattern. Thus, the average distances between facilities, work places and residence are relatively short.

To Schoffham and Vale, within the radius of walking distance, local autonomy can be encouraged by intensification of a range of local facilities at the net residential density of 500 pph. It is away from the sense of overcrowding as long as a proper balance would be achieved between land-use and built form (Schoffham et al., 1996: 72).

Thomas and Cousins keep their compactionist stance flexible with respect to the handicaps of containment policies. To them, physical compactness should be complemented with 'virtual' compactness, by referring local and regional level of urban compaction (Thomas, et al., 1996).

The main handicap of compact city model is its low level capability for the adoption to changing conditions in process. Change is possible only by replacements and local transformations within urban fabric. Additionally, in compactionist arguments, there is no clue about the issue of threshold values for the density and size of compact city. Thus it is not clear whether the maximum ranges of population and extension areas of the city should be.

6.2 Concentrated Decentralization (Dispersal Pragmatism)

The current trend, supported by market provision and user preferences is decentralized low-density urbanization, which is in contradiction with the current compaction trend in developed countries. Certainly, consumer demands lead builders invest in mass housing and office parks in decentralized locations (Breheny, 1997: 211). In this context, the need for enabling a combination of compactionist aims and the benefits of *inevitable* decentralization process results in a compromise position in pragmatist sense.

Regarding the real trend, Owens legitimizes such an approach with by calling it 'decentralised concentration'. According to her,

"It cannot be assumed that people will be prepared to relocate to reduce energy consumed in transport or in the home, but if they do, evidence suggests that the longer term effect is likely to be closer integration of different activities. Superimposed on current urban trends, this may lead to greater autonomy in urban subcenters and in smaller freestanding towns- decentralised concentration." (Owens, 1986: 23).

According to Elkin, et al., in larger cities, mixed land-use and high-density alone cannot be enough to achieve compactness-based sustainability measures. The development of nodes within the urban fabric could be a solution to realize compact urban models. Hence, *decentralized concentration* should be based on the policies of creating small to medium sized local centers, and directing future growth to appropriate centers in high-densities while defining each as transport nodes (Elkin et al, 1991: 8, 16).

To dispersal pragmatist's point of view, current trend of developing telecommunication technologies enhancing decentralized way of urban life would be more beneficial if a greater degree of self-containment is provided. Thus, urban-rural integration can also be achieved by dissolving bulk urban compactnesses (Breheny, 1992b: 12).

Within this version of compactness perspective, overcentralisation should be avoided. Instead, it is preferred that urban developments would be planned around dispersed clusters, which are relatively compact *urban sub-units*. While planners encourage higher urban densities and concentration rather than the dispersal of facilities, they do not necessarily implement policies through centralization. Clustering new developments in transport nodes and keeping moderately high density along these routes would be more proper planning policies for concentrated decentralization (Breheny, 1992b: 35, 38). The model strongly depends on transport systems in future evolution not only in city-scale but also in regional scale. Concentrated decentralization, highly refers to the models of satellite city and polycentric net.

With respect to energy consideration, Van Til advocates the model of 'concentrated sub-regional cities'. In an energy-short future, ideal settlement pattern should be based on sub-regional centers located within two kilometers of the node and housing within a ring of ten kilometers by the criteria of high-density building space (Van Til, 1979: 326).

With respect to city structure, it can be inferred that the whole urban structure should be composed of the clusters of settlements. Each is potentially as compact as the core/compact city but limited in size and spatially separated from each other. Hence, the model incorporates unbuilt open land with its fragmented structure. Public transportation is the primary system of the form and structure, while in the smaller and more fragmented areas secondary transport systems may be feasible. From this point of view, it is more flexible than core/compact city approach.

In addition, multiplicity of different centers in different size, capacity and specialization also provides another flexibility with regard to urban growth. Having no overall rigid geometry, hierarchically differentiated settlement nodes have a potential to adapt new form of developments in the future with an open-ended system. However, strong control would be required to prevent clusters grow beyond a specific size, if multiplicity of urban form is aimed to be preserved (Frey, 1999: 49-65).

Dispersal pragmatists focus on the transformation of urban peripheries within a sustainable city-regional pattern. Aiming decentralized concentration in polycentric model, they claim that a citywide well-integrated rail system would be feasible. As a result of the pattern of multi-compactness, substantial energy efficiency and balanced composition between green areas and urban land could be achieved. Thus, by means of the model, it is assumed that a realistic alternative to the core/compact city can be provided (Thomas & Cousins, 1996: 63).

To Banister, three alternative energy saving models within decentralized *concentration* can be realized as fallows:

- Concentrating development in relatively distant smaller towns -about 25.000 pop. - in a close proximity with each other.
- Transforming the pattern of sub-centers within the urban fabric by concentrating at nodal points (existing facility sites which are inaccessible without car) around the city.
- Promoting concentrated car-free neighborhoods within city limits by supporting them with public transport (Banister, 1992: 179, Banister, 1997b).

For Banister, rather large, self-contained and isolated settlement, series of small, well connected and concentrated settlement pattern is the most energy-efficient form for car-dependant societies. The main advantages of small urban settlements are low-level land costs and evading urban congestion, while its handicaps are insufficient amenities and service opportunities. Then again, main advantage of restructuring within city limits reducing costs of development on existing infrastructure.

6.3 Smart Growth

Smart Growth is a model, which has being widely preferred in America where incompact urbanization pattern is still a problematic to be dealt with. The main principles of Smart Growth are based on

- *growth within communities*: adaptation of existing structure, upgrade and replacement of infrastructure to limit outward-growth,
- compact 'walkable' communities living and working without long commutes (Baker, 2003: 8-9).

Although they share the same outlook with reference to the interpretations on urbanization, there are mainly three development approaches in Smart Growth movement:

- Traditional Neighborhood Development -TNDs-.
- Transit-Oriented Developments -TODs-.
- Transit Villages

Smart Growth is widely pronounced with New Urbanism is the adoption of two development/design concepts (Traditional Neighborhood Development –TND- and Transit Oriented Development -TOD- to the literature of compact community planning by New Urbanists. However, transit is not a pre-requisite feature of New Urbanist development -since many New Urbanist projects takes place in suburban areas- public transit becomes a design tool for the projects to contain higher densities and more pedestrian friendly design features (Mineta Transport Institute, 2001: 7).

As a reaction to urban sprawl, a group of American architects and urbanist started a new movement to develop more compact, economically, socially and environmentally balanced communities. Within neo-traditional point of view, they generally advocate returning to traditional planning principles, mixed land uses, and narrow street layout in a tight grid network. Congress for the New Urbanism (CNU) describes their mission as follows:

"Based on development patterns used prior to WW II, the New Urbanism seeks to reintegrate the components of modern life –housing, work-place, shopping and recreation- into compact, pedestrian-friendly neighborhoods linked by transit and set in a larger regional open-space framework." (Congress for the New Urbanism, 2001).

In this framework, urban compactness is not a design objective, but an end-point to realize design principles of New Urbanism. The design patterns, they offer, are based on historical urban context -street, precinct and town- and building typologies. Their compactness approach is a direct result of their historically inspired point of view towards the conception of urbanity even though they do not challenge present suburban trend fundamentally. For that reason, New Urbanism is evaluated with their postmodern, neo-traditional stance, while many see it as a broad term holding the most of practical measures and goals of Smart Growth (Gillham, 2002: 180).

Even though they carry out an influenced discourse against urban sprawl, New Urbanism is criticized for not accomplishing any model for mixed use. Hence, in implemented New Urbanist projects there is a weak horizontal mix of uses rather than a highly integrated vertical mix, which is widely preferred. In most of them, commercial and civic uses dominate the center and housing is on the periphery. (Neuman, 1999: 11).

6.3.1 Traditional Neighborhood Developments -TNDs-

Traditional Neighborhood Developments -TNDs- are one of the typical Smart Growth development alternatives, which are characterized by,

- Relatively compact subdivision of urban land comparing contemporary ones in U.S,

- Emphasize on walking rather than auto-dependence,
- Mixed-land use,
- Traditionally narrow roads, common greens and squares,
- Neo-historical (attached and detached) housing on small lots (Gillham, 2002: 181-82).

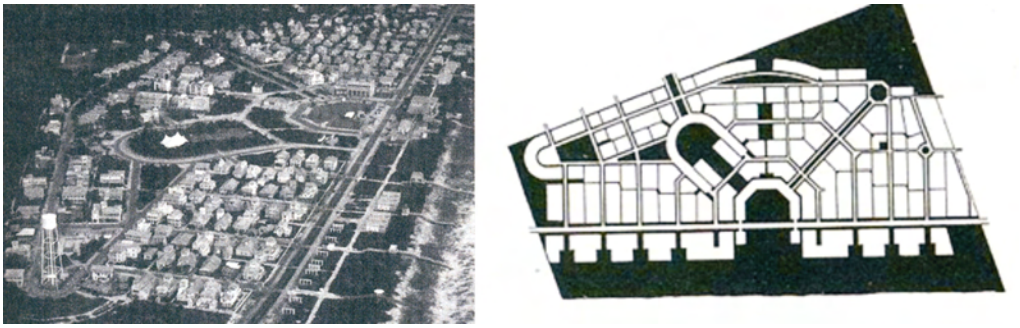


Figure 6.2: The first neo-traditional town: Seaside in Walton County, Florida and its plan schema. (Source: Duany et al., 1992: 22, Gillham, 2002: 181)

Most TNDs have been developed on greenfields. In fact, that constitutes the main critiques towards TNDs. Not being an infill development, it is accused of promoting a new kind of sprawl by consuming open land without a regional planning framework. Hence, there is no broad planning frame in TNDs projects, unlike other Smart Growth development approaches. Additionally, most realized examples of TODs are in failure of achieving mixed land use objectives. They are generally under the dominancy of residential development. Also, targeting the same economic groups with car-dependant suburban community they are in difficulty to create a more walkable type of urban space at both macro and mezzo scale (Ibid).

6.3.2 Transit Oriented Development -TODs-

Transit Oriented Developments –TODs- differentiate from TNDs with regard to functionality of settlement pattern. While there is no transit element in TNDs, the idea of TODs is constructed on transit-based urban development where transit nodes are as a catalyst of development. This is the main the feature that gives its physical characteristic, compact and centralized space organization to TODs.

Before systematization of the urban pattern, Calthorpe, the pioneer of TODs idea, identifies the urban problem as segregated, car-dependant sprawl type development and then summarizes the principles of TODs approach as the alternative to urban sprawl:

- Organizing growth on regional level to be compact and transit supportive,
- Placing commercial, housing, jobs, parks and civic uses within walking distance of transit stops,

- Creating pedestrian-friendly street networks directly connects local destinations,
- Providing a mix of housing types, densities and costs,
- Preserving sensitive habitat, riparian zones and high quality open space,
- Making public spaces the focus of building orientation and neighborhood activity,
- Encouraging infill and redevelopment along transit corridors within existing neighborhoods (Calthorpe, 1993: 43).

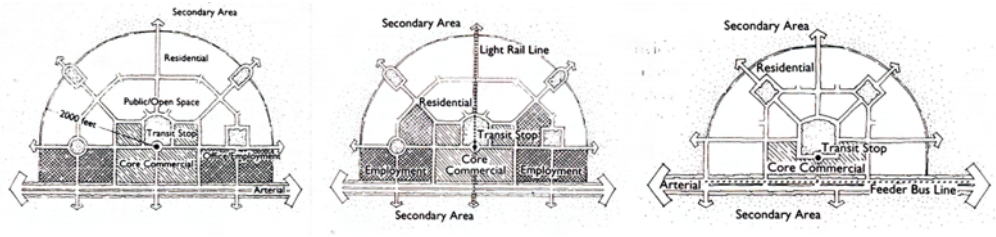


Figure 6.3: Diagrams of Transit Oriented Development (TODs), Urban TOD and Neighborhood TOD. (Source: Calthorpe, 1993: 56-57)

Diagrammatic of a TOD consist of a core commercial area, supported by a transit stop and surrounded by high-density mixed-use core. Although its size is determined case-by-case, total settlement is within walking distance -average 600 m- keeping outer residential area in close-proximity with transit stop. Major streets are oriented towards the core in a concentric pattern. That is why; a TOD has a nodal structure rather than a linear form like earlier railroad and streetcar suburbs.

Supporting transit transportation, minimum residential density is 10 du/ha with average 18 du/ha in overall settlement (see: Figure 6.3). Secondary areas, in peripheral location have lower density with single-family housing.

As a differing feature of TODs from other compactness approaches public transport system is not always integral to the development process of TODs. Car use continues to be a substance of each settlement until public transport arrives (Thomas et al., 1996: 330). However from the schemas public transport is understood as a structural element of the development pattern. Compared to other compaction alternatives, TOD and the other Smart Growth models have a relatively low-level compactness. It inevitably makes them to approach car use at a certain degree. Since with the average population of 3000 for neighborhood TODs and 6000 for urban TODs, feasibility of public transport is questionable (Thomas et al., 1996: 330).

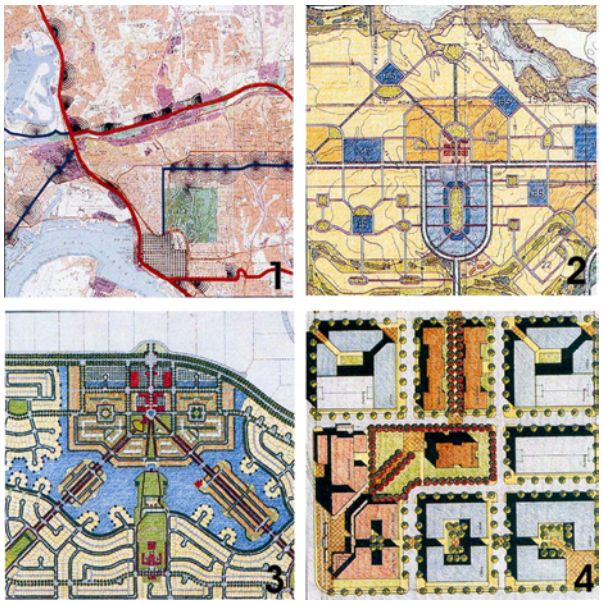


Figure 6.4: Scale hierarchy of new urbanist urban compactness of TODs. (Source: Calthorpe, 1993: 83)

TODs are located in redevelopable sites, infill sites and new growth areas. While growth areas are developed based on basic TODs principles, redevelopable sites and infill areas as underutilized urban lands, are regenerated through TOD's compact and pedestrian-oriented character. Transformation in infill areas is implied to provide walkable, mixed-use neighborhoods, called 'Pedestrian Pocket'. A Pedestrian Pocket has high housing density within a comfortable walking distance and jobs over the residential at transit stop.

Different from TNDs, TODs approach has a comprehensive approach in a plan hierarchy from regional level to the scale of urban district. Shared characteristic of the plan schemas is a precise emphasis on urban compactness within a holistic framework. In overall schema, owing to its fragmented development structure, containment of urban fabric is lover than those of other compactness approaches, for TODs.

6.3.3 Transit Village

Although not belonging to New Urbanist approach, transit villages have significant similarities with TODs. Development principles of transit villages are based on public transportation. Yet, different from TODs transit villages are not planned by design prototype with a-priori design principles and pre-determined guidelines. Unlike TODs, transit villages have high level of urbanity, functionally and physically. While average density for TODs is 18 du/ha, recommended densities for transit villages ranges from 30 to 150 du/ha (Gillham, 2002: 184).

COMPACT CITY		CONCENTRATED DECENTRALIZATION		SMART GROWTH	
Protagonist	**Solution**	**Protagonist**	**Solution**	**Protagonist**	**Solution**
Ian Gordon (1997)	Higher urban densities and concentrated workplace	Jon Van Til (1979)	*"Concentrated Sub-Regional"* • High- density regional nodes within 1o radius from the center.	Peter Calthorpe (1993)	Transit Oriented Developments (TODs)
David Lock (1995)	Increasing residential capacity within current urban fabric by urban	Peter Newman & Jeffrey Kenworthy (1999)	"Future" Nodal/Information City • revitalizing inner city • focusing development around rail system in local high-density urban villages • discouraging urban sprawl • Extending transit system in to suburbs	Andreas Duany & Elizabeth Plater-Zyberk (1991)	Traditional Neigbourhood Developments (TNDs)
D. Banister (1997)	Reducing the need to travel by concentration and diversity of activities.			M. Bernick & R .Cervero (1997)	Transit Villages
Commission of the European Communities -CEC (1990)	• High density compact cities • Containment by keeping future development within existing boundaries of cities.	T. Elkin & D.. Mclaren (1991)	• Strengthening of small-to-medium sized local centers • Integration high densities and land uses • Encouraging medium-rise high	M.Buxton (2000)	Traditional Neighbourhood Design (TND) increased self-containment & urban villages-
Urban Task Force (1999)	The pattern of compact urban development around mixed and integrated urban, district, neighborhood centers and local 'hubs'.	S. E. Owens (1991)	• Concentration without centralization: Integration of moderately high-density development along transport routes.		
E. Scoffhamm & B. Vale (1996)	Compactness within local autonomy at net residential densities of 500 pph within each walking distance radius.	D. Banister (1997)	• Promoting new concentrated developments (pop. 25.000-50.000) around existing settlements. • Concentrating development to the facility sites, inaccessible without car. • Creating concentrated neighborhoods		
L. Thomas & W. Cousins (1996)	Combination of physical compactness with a 'virtual' compactness in local and regional				
		M. J. Breheny (1992)	Various forms of 'decentralized concentration', based around single cites or		
		J. Ravetz (2000)	Freestanding, medium sized settlements of about 80-100 pph net or 40-50 pph		
		R. Ewing (1997)	• Concentration of employment • Clustering of housing • Mixing of land-uses • Neither high-density nor mono-centric development		
		P. Rickaby (1991)	"Decentralized Concentration": • City with a core and a number of high-density sub-centers based on public transport nodes.		

Table 6.2: Contemporary approaches on compact/centralized urban form(s).

With their spatial configurations, transit villages can be interpreted as a new version of early railroad and streetcar suburbs of late 1800s. Even though, they do not consist of neo-traditional design elements. Bernick and Cervero describe a typical transit village as,

"At its core, the transit village is a compact, mixed-use community, centered around the transit station that, by design, invites residents, workers and shoppers to drive their cars less and ride mass transit more. Transit villages extend roughly a quarter mile –more than half the radius recommended for TODs- *from a transit station, a distance that can be covered in about 5 min by foot. The centerpiece of the transit village is the transit station itself and the civic and public spaces that surround it."* (Bernick et al., 1997: 5).

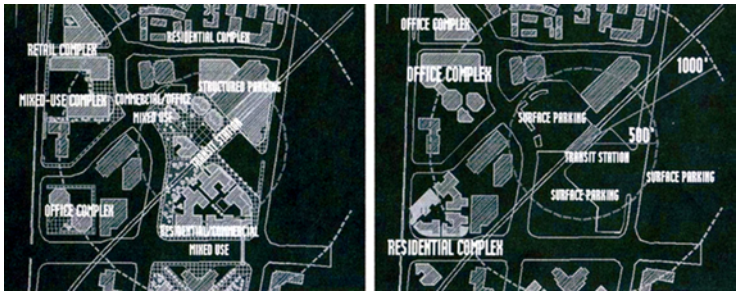


Figure 6.5: Compact core of transit village as preferred design code versus loose/spread-out development pattern around transit node. (Source: Bernick et al., 1997: 92)

Here, the density factor is not taken as a spatial connotation but considered as an objective requirement for feasibility of transit systems. With the instrumental role of density, land-use diversity is introduced to encourage people to walk or ride instead of driving. So, pedestrian movement would turn into harmonizing travel mode with transit. On design, as the last dimension, they give some clues for compactness of transit village. In common design treatments, two indicators are closely related with compact design of transit villages:

- Continuous and direct physical linkages between major activity centers, sitting of buildings and complementary uses to minimize distances to transit stops,
- Integration of major commercial centers with transit facility, including air rights development (Ibid: 74-86).

Transit Villages become one of the most common Smart Growth policies in North America. In the 1980s, a series of urban village projects put into practice in Los Angeles County and San Diego -Miami, St Louis, Sacramento- as well as in Canada –Vancouver-. These developments guided by the planning principle on redevelopment process in high-density, mixed-use nodes around transit stations (Babalık, 2000). Actually, Transit Village approach -also called as *urban village*- can be seen as a kind of American and Australian version of Concentrated Decentralization.

6.4 Critiques Toward the Arguments of Compact Urban Form

In a broad sense, the arguments against urban compactness are directed from four concerns: methodological, ideological, political and technical.

Certain critiques toward the arguments for urban compaction emerge from the nature of compactionists' mode of thinking. Searches for urban compaction are blamed for becoming a sort of dogma, being a representation of technical solution to environmental and urban problems. Instead of analyzing the complex social structures and socio-cultural meanings, which forms urban development, it is rather perceived as a ready-made solution.

Guy and Marvin share such objection. To them, the compact city discourse is a static notion of sustainable urban form. Idealizing a land-use pattern in the form of compact city represents a simplification of complex and continual phenomenon. Hence, as a '*big idea'*, compact city is so dominant that anyone would not oppose current tide of opinion and promote greater alternative form of sustainable development (Guy et al., 2000: 10). Similarly, according to Neuman, the attempt to promote sustainability by means of physical models is nonsensical. Instead, sustainable city should be considered in co-evolutionary process city, inhabitants and environs, ecological, social, economic, civic, fiscal and infrastructural concerns. (Neuman, 1999: 12)

Some critiques towards compactness and the defense of dispersal as result of definite ideological stances. It is clear that urban compaction is available in sprawl-restrictive planning regimes, which let an effective control of urban land. This is the point that advocators of urban dispersion reject. To them, this kind of planning intervention is inappropriate in free market-economies. Instead, they suggest that pricing mechanism and synergistic opportunities of competitive environment automatically shape the most efficient urban structure. Principally, advocating the efficiency of free-market society, they accuse people, who recommend strong planning control and regulations for urban compaction of adopting "*Maoist planning methods*" and aiming the "*Beijingisation of US cities*" (Gordon et al., 1989: 342-344).

The strongest critiques to the compactionist view and growth management policies in progress came from Gordon and Richardson colleagues. To them, the analyses confirming the relevance of urban compactness -by referring studies of Newman and Kenworthy- does not work methodologically. Since the problem formulation is wrong, policy prescriptions recommended are out of context and inappropriate (Gordon et al., 1989).

In this context, their primary criticism toward compact city arguments concentrates in five topics. It is important that, their counter arguments are in the context of United States and cannot be considered as a holistic opposition to compactionist claim.

- There is no crucial pressure of suburban development on prime agricultural land in United States. For this reason, there is no need to relate the issues of compactness and preservation of agricultural lands. If the entire U.S population lived at suburban sprawl densities –one acre per household- just three percent of agricultural lands in the U.S. would be utilized.
- Density ranges offered by compact urban designs do not get along with density preferences of the public. Adopted state-level mandates for compaction like urban-growth boundaries are top-down commands of planning rather than the expression of individual preferences.
- Current degree of automobile use makes compactionist public transport claims unfeasible. If all suburban growth would be realized a TODs system, 63 TOD would required and 140 miles of a transit system within an area of Washington, DC Metropolitan. In this case, the needed system would not a feasible one.
- Social equity claim of compact city arguments are not supported by real cases. The more highly promoted compact communities like Laguna West and Seaside are much less affordable with average housing prices compared to suburban communities (Gordon et al., 1997: 95-102).
- Suburbanization is the successful mechanism of reducing congestion. Contrary, compact development model is not a treatment for traffic congestion in cities. Higher densities mean more congestion, not less. In current sprawl process, commuting pattern is increasingly suburb-to-suburb. This is the factor that increases trip speeds. Furthermore, more compact development has a minimal influence on improving air-quality. (Gordon, 1997).

After those criticisms, the author concludes that,

"…So much of the so-called New Urbanism and the compact city movement rests on wishful thinking and the arrogance of social engineers who override individual preferences." (Gordon, 1997).

Although they share compactionist point of view, Jenks, Burton and Williams also argue the claims for urban compactness, methodologically. They point out the weak relationship between the concept development on one side and the establishment and testing of urban compactness on the other. To them, beyond conceptualization, compact city theory should suggest beneficial outcomes for the actions and the solutions to be implemented (Jenks et al., 1996: 7).

A market-oriented objection to urban compactness claims comes from Staley with respect to the potential savings of compact urban development. To him, the authors, whose assumptions are through lower construction costs of compact developments, falsely presumes the costs -such as road extensions, capacity limitations or changes in technology- remaining same over 25-year period. In

some cases, large lot development -within compactionist way- could reduce infrastructure costs by using septic systems rather than more expensive extensions of existing sewer lines (Staley, 1998). Parallelly, Richardson et al. maintain that more compact urban forms are costly for urban infrastructure in many ways. Extra costs of vertical building results from crowded roads and facilities. Contrary, flatter cities gain benefit from newer infrastructure that may be less costly to install and to maintain (Richardson et al., 2000: 9).

With a same perspective, Biermann states that any generalization on compact development, which claims for decreasing infrastructure costs, is not a realistic outlook. To her, bulk infrastructure capital costs do not automatically decrease in the process of compaction. It depends on the interrelationship between infrastructure thresholds, capacities, location and changing density over time and space. In all cases, total infrastructure costs increase when the density increases. It is due to additional demands occurring in the whole system. Although, per capita costs decrease with increasing density, it is not valid for all items. For example, per capita costs of electricity increase with increasing compactness (Biermann, 2002).

About the relevance of the urban compactness, it is widely pointed out that the trend lived in most European countries is 'counter-urbanization'. Counter-urbanization can be identified as a net shift in population downwards in the urban hierarchy, from larger cities to smaller towns and less urbanized areas. It accompanies with a considerable increase in travel chiefly by car, because of decreasing concentration and compactness degree (Headicar, 2000: 160, 165). This process is supported by the consumer preferences today. Because of the reason that there is an inevitable 'clash' between the high-density aspirations of the compactionist/centrists and the communities considering their own criteria of the quality of life. From that point, Breheny examines the social acceptability of compactionist policies (Breheny, 1997; Breheny, 1995: 415-20).

Additionally, urban compaction is considered doubtfully regarding new sort of hierarchical structures -mono-centric or polycentric-. Hence, conventional hierarchical structures are supposed to be weakening and new 'spaces of flows' are taking their place today (Paivanen, 2003).

Internal logical contradictions are stated by Breheny. To him, drastic compactionist policy proposals for all new developments within existing urban boundaries are simply impossible in practical terms. The proposals for compact city in extreme case like that of European Commission are unrealistic. Instead of trying to beat the real trends, policy makers who support urban compactness should direct them in a rational outlook. From this point, the real challenge is to redesign existing urban form. So, planners should adopt intraurban sustainability principles on the issues of density objectives, restrains of privately car use, urban greening and mixed use (Breheny, 1992b: 21-22). Otherwise, policies targeting to prevent development at countryside will push pressure to urban areas, and result in loss of urban green spaces, increased congestion and decreasing quality of life. To him, being far from the ignorance of practicalities of real world, Ebenezer Howard's compromising position -in favor of urban

containment and protection of countryside by combining town and country- still represents a proper outlook for the issue (Breheny, 1996: 32).

In the UK, Town and Country Planning Association (TCPA) challenges the bases of the report. Remaining long–standing garden city tradition, TCPA still offers decentralized -but not necessarily low-density- urban development pattern. Within such an approach, the group has a contradictory position against compact city and claims that renewable energy, water recycling, self-sufficiency and general biodiversity can be recorded better in less compact settlements (TCPA, 2000).

General opposition of compact city causes from the common association of compactness with congestion, increased pollution, loss of amenity space and reduction of privacy practically demonstrated in the cities like Calcutta, Cairo and Rio (Knights, 1996: 116). This perspective creates a kind of antagonism between urban and rural protectionists emerged after compactionist urban politics. In the U.K., environmentalist groups are in opposition to the new settlements proposed speculatively out of existing urban areas. With the consideration of natural preservation, counterarguments[6] in favor of protecting urban areas rather developing it have became influential. Their concerns direct from negative externalities of urban intensification policies. Particularly in suburbs, they claim that intensifications result in low quality of life with congestion and loss of amenities in suburbs (Breheny, 1992c: 140). Indeed, this is very case of counter-compactionist point of view, with regards to the approach toward urban and rural areas.

Technically, although accepting common advantages of urban compactness as an alternative form of sprawl type-urban development, Barton claims that compactness cannot properly meet structural requirements of planning for open space corridors and public transport. (Barton, 1996: 16).

As said by Smyth, compact city is questionable with respect to the social context. Social perspective is not at the focus of compact city theories. Creating high-density, mixed-use does not necessarily ensures social mix, unlike a functional diversity. Compact city policies have a potential -in negative term- to exclude and displace socially disadvantaged groups in inner areas of the city (Smyth, 1996: 107).

[6] For example to such social pressure bodies, see: http://www.oss.org.uk

CHAPTER 7

POLICIES FOR URBAN COMPACTNESS

The continuing chapter of the study aims to examine the operational basis of urban compactness in the planning agenda of developed and developing countries. The basic policies, which are referred first, are the typical planning policies of different cities from Western countries, which accept compact city policy as a principle doctrine of urban planning and design Then, those are exemplified as the international cases. While a framework on the policies of urban compactness in the context of developed countries is constituted in the first section of the chapter, the original rationality, relevance and vitality conditions of urban compactness in the developing urban world are also searched in the second part of the chapter. By referring to different developing cities, which are already compact/dense by their nature or by planned processes, a general outlook on contemporary urban compactness is aimed to be created.

7.1 Planning Policies

There is no doubt that at all scales, planning/design models for compact urban form require an effective control of space both within city and countryside. This is the political side of the issue. Problematic of the control of urban space, which is essential for a compact urban form, is prominently determined by societies' property regimes. When we look at the countries whose city structures are virtually tight and having compactness characteristics, we perceive that there is a different idealization of the relationship between property and development then those in the countries having dispersed settlement patterns. For many countries in Europe, where is the mainland of urban compactness tradition, development permission is not a right and its denial by public authorities does not require a compensation in many cases. Such an egalitarian ethic is complemented by a public land ownership system, which enables local authorities control any extensive use of urban land (Beatley, 2000: 57-59).

Controlling urban space to absorb abandoned urban growth has produced three prominent planning experiences in modern times. Although their results and successes are disputable, they have served as main alternative approaches to channel and control urban growth. In postwar period, London, Paris

and after 1970s Portland, Oregon planning practices represent three distinct compactness approaches quoted above, however they do not claim urban compactness in a high priority.

The Greenbelt system is a historic element in European city regions, which is instituted in British cities, remarkably for London. The Greater London Plan (1944), implied a growth boundary and directed further growth beyond green areas to newly established towns and villages: 'new towns'. Their roots go back to Howard's Garden Cities, which are surrounded by a recreational an agricultural land. It is obvious that, greenbelt policy stabilized the growth of London and became a key instrument to keep it in today's growth limits. (Hall, 1990: 163-173.) That's why greenbelt policy has been implemented in different ways by many regional governments around the world. Currently, for Vienna, Barcelona, Budapest and Berlin, greenbelt approach is valid within city-regional context (Kühn, 2002: 26).

Another specific anti-dispersal planning practice, which can be recognized as a cult in planning literature, is Paris experience. Rather than limiting urban growth, channeling the development was preferred in Paris metropolitan region in the 1960s. New developments were directed to the specific growth poles and large new towns in an urbanized region were created. Implementation of planning policy was enabled by coordinated by metropolitan-vide transit system, called as Regional Express Rail -RER-, which links the nodes of employment and housing closely tied to the central Paris. (Evenson, 1979: 340-346).

As the last model, 'urban growth boundary' was first applied in Portland, the U.S. In 1975, the regional government of Portland, Oregon developed an urban policy, which was alike those in other American cities. A similar kind of greenbelt policy, like for London, was activated by a designation of 'Urban Growth Boundary'. Encouraging public transit policy combined with preservation open spaces and farmland areas. Maximum usage of existing facilities was the tool of the success of anti-sprawl policy in Portland case. Currently, 85 percent of all new growth is within five minute-walking distance to designated transit stops. This experience has been one of the most effective growth management in the U.S. (Newman et al., 1999: 230).

At this point, London experience can be considered in the context of compact city model, while development pattern in Paris can be regarded as decentralized concentration. Portland-type development pattern is an example for smart growth approach. Even none of them claimed a compact urban form directly, they serves original planning tools for today's compactionist planning policies.

Planning objectives and strategies for compact urban form are often conducted in problematic conditions. Local effects of compaction policies in different countries form common judgment in public agenda. Therefore, the answer of 'how compact' is as important as that of 'what compact' in practice, today.

Planning policies for compact form can be classified in mainly three themes:

- Urban Consolidation/Intensification
- Growth Management
- Land-Use Control

7.1.1 Urban Consolidation/Intensification

For various cities, especially those in Europe, urban consolidation has become an instrument for compact city policies. Consolidation policies have been in urban agenda since the mid-1970s. The major aim is re-arrangement of fragmented urban fabric in a more intense form (Williams et al., 1996: 84). After a consolidation process, the degree of the compactness of city is aimed to be increased. The main planning objective is the fullest use of urban land before developing on greenfields. These policies are implemented to reduce development pressure on the edge of cities. Re-use of wasted land in existing urban area can be considered as sustainable solution while protecting critical assets on urban fringe. In addition, developing on existing basic social and a physical infrastructure -within binding conditions of carrying capacities- is cheaper than developing on virgin land in urban fringe (Haughton et al., 1994: 90).

Buxton points out the nuance between consolidation and intensification as fallow: Urban consolidation can occur in either existing urban area or greenfield sites on the urban fringe Whereas, intensification occurs in planned ways and generally through identified redevelopment sites like vacant public land, former industrial sites, which are close to the transport and service centers (Buxton, 2000: 56). On the other hand, the terms of consolidation and intensification are usually used in changing meanings in the compact city literature today.

In practice, planning tools for intensification are categorized in two aspects: intensification of built form and intensification of urban activity. (see: Table 7.1) Both of them strengthen the degree of urban compactness, by definition.

Table 7.1: Planning methods of urban intensification. (Lock, 1995: 174, Jenks, 2000: 243)

Intensification of built form
○ Development of previously developed land (Infill on vacant urban land) ○ Redevelopment of existing or previously developed sites (increase in floor space ratios) ○ Plot subdivisions in large size plotted-residential areas and conversions (increase in the use of buildings) ○ Additions and extensions to existing buildings. (increase in the density of built-up area)
Intensification of urban activity
○ Increased use of existing buildings or sites ○ Transform of use (where an increase in use results) ○ An increase in numbers of people living in, working in or traveling through an area

When applying urban consolidation, increasing urban densities without consideration of urban structure does not make any sense. Instead, creating a number of sub-centers within urban fabric is more appropriate especially for supporting the development of public transport systems (Beaumont et al., 1982 cited in Haughton et al., 1994: 95).

Figure 7.1 One of the intensification nodes along "the longest street in the world", Yonge Street intoronto.
(Source: http://www.clr.utoronto.ca/PROJECTS/Toronto)

From this perspective, one of the best practices is realized in Toronto, which Canadian cities have also suffered from low-density suburban development until the 1970s, when more compact rail-based cities were being adopted by conscious urban policies. There has been a paradigmatic shift from a low density, auto dependent suburban model to a more intensified urban one. After 1970, a series of urban nodes have been formed along the city's main artery. Alongside the rail line, allowed maximum

densities for commercial and mixed-use apartment buildings around stations was coordinated by the zoning regulations. (Church et al., 1995) This kind of urban development approach is identified as '*joint development'* linking real estate development closely with public transportation (Black, 1995: 243).

Such a compact development strategy is complimentary the with intensification policies in the UK, which is emphasized by Department of Environment:

"… local plans should look to concentrate higher density residential developments near public transport centers or alongside corridors well served by public transport and close to local facilities…" (DoE, 1994).

In Finland, intensification has been adopted as national urban policy. Densification of underused central areas, such as environs of traffic terminals has been introduced to prevent further sprawl and to reduce land consumption. In 1996, by means of 'compacted' peripheral urban areas, housing needs of as many as 4 million people were satisfied (Ministry of the Environment, 1996: 33, 36).

As another compactionist policy model, Berlin's current strategy plan in 1994 objected that 90 percent of the future development would occur within existing urban areas through the *infill* policies to the year 2010. Areas planned for redevelopment are older industrial areas, vacant sites, dividable larger single-family lots and rooftops, which can be converted to housing (Beatley, 2001: 38-39).

Brownfields -former industrial areas and other derelict lands- and greyfield sites are the potential sites for compact intensification in urban areas. The flight of original activities from those areas causes an innovative recycling and re-use possibilities. Since urban compaction can be best composed by transit-based development, existing transit infrastructure can be evaluated as an asset for urban intensification. Central reason for the preference of compact (re)development in brownfields is their locations, having prime opportunities for public uses. (Gilham, 2002: 190-194). Most of the brownfield-redevelopment projects encourage mixed office and residential development integrated with transit modes. That's why, transformation projects of brownfields and greyareas are considered within urban compaction policies.

The results of the implementation of urban intensification projects, particularly in Europe, reflects both problems and benefits. When we look into the responses, come from the dwellers in intensified areas, it is perceived that the problems focus on the negative effects on natural and built environment, whereas, the benefits emerges from the positive effects on services, utilities and social issues (Jenks et al., 2000: 20).

Table 7.2: Practical results of urban intensifications. (Source: Jenks et al., 2000: 20; Williams, 2000)

Benefits	Problems
○ Improvements to area through high quality design of new buildings	○ Greater traffic congestion
○ Reused derelict, vacant and contaminated land by protecting the countryside	○ Increased environmental wear and tear
○ Meeting housing need by providing new urban land	○ Negative impacts on historic building fabric
○ Upgrading of area	○ Increased pollution-air, noise, litter
○ Improved use of vacant buildings	○ Loss of open or green space
○ Increased local prosperity	○ Deterioration of area through poor design
○ Providing critical mass to support local business / reducing competition with out-of-city commercial developments	○ Erosion of local character /potential bad neighbor effects of high density and mixed-use
○ Unobtrusive, small-scale changes	○ Perceived over-development
○ Reduced local number and length of trips	○ Overcrowding
○ Improved capability of district heating and combined heat and power systems	○ Unwelcome change in the social character of the area
○ Improved access to employment for urban residents	○ Reduction in private space, smaller houses and gardens

From the overall success of urban intensification in UK, where it is a national urban policy, it can be inferred that the results of the urban consolidations in city centers are likely to be more positive than those in residential areas. (Williams, 2000: 39).

In addition to social acceptability, the physical limits and thresholds of the area determine the physical acceptability of urban intensification. For example any offered intensification of a specified area may lead to an excessive pressure on utility provisions like water supply, electricity, gas and so on. (Burton, 1996: 238).

It would not be appropriate to generalize urban intensification within a normative manner. The degree of success mostly depends on certain restrains and opportunities peculiar to any cities and urban areas, which are subject to consolidation. It is also considerably up to the characteristics of managerial and administrative strategies of the policy, which we do not go into detail here.

7.1.2 Growth Management

Growth Management is a widely implemented planning policy in the countries, where rapid urban growth is in the agenda of urbanization. The overall goal of growth management is to control urban growth in the limits of development and to preserve environmental and open space resources and

community character. (Nelson, 2001: 16051) The common feature of growth management programs is the containment of urban development within 'urban growth boundary' -UGB- as stopline. In order to support compactness, 'upzoning' -accommodating high density-intensive land use categories- and facilitating nodal and corridoric development is preferred within UGB. It is critical that sufficient urban land must be provided within UGB to accommodate market demand. If it is under demand level, land prices may increase to unaffordable ranges. Contrarily, too much land would be harmful for compact and contiguous development principles (Nelson, 2001: 1653). In Portland, Oregon planning practice, region-wide growth management strategy has been activated to focus all new urban growth in existing urban areas, especially around the light rail system –MAX-. By doing this, major new developments were appeared around MAX stations. Additionally revitalization of public spaces in CBD could be feasible through the growth management program (Newman et al., 1999: 228).

7.1.3 Land-Use Control

To reduce negative effects of higher density development, 'Incentive Zoning' ordinance is preferred by most intensification projects rather than conventional zoning regulations. Incentive Zoning offers specific public dispensations such as increased densities and building heights, tax reduction or street improvements. Then, specific contributions such as public open spaces, affordable housing etc. are required from developers (Silberstein, 2000: 35). It provides a degree of flexibility to consolidation policies with the certain advantages for both public and private.

To re-form urban compactness with mixed land use in redevelopment/regeneration project areas, innovative land-use policies are introduced. Instead of implementing traditional zoning regulations, based on land-use restrictions, an alternative approach has improved: '*zoning by building type, not by use.*' With such a zoning guideline, building type is coded to determine land-use type in an urban district. By spatial regulations -parking, street layout, building types- the impacts of different uses is monitored. In such a case, small convenience stores, day care centers or office spaces can be locate in a residential district, while big retailer can not, because of limiting building and parking standards. (Smart Growth Network, 2002: 5-6). This approach provides not only mixed-use in pedestrian accessibility but also allows a dynamic and flexible transformation in land uses over time, when the need of the community evolves.

Even intoday's development level of industry, heavy industry and compact development do not seem to be compatible with each other. They suggest that the best approach is to separate industrial uses from nearby residential areas by means of a buffer of undeveloped land. These lands should be activated by recourse uses such as agriculture and forestry in order to avoid an intrusion to residential areas. They also point out that such a policy would be in contradiction with the main goals of compact city policy, which are jobs-housing balance and reduction of travel time to work. Alternative approach is smaller buffers and integrating management techniques like industrial performance standards to

perform them in close proximity to residential areas. (Burby et al., 2000: 140) At that point, integration of small-scale production sites, with minimum negative externalities, into urban land provides significant opportunities to restrain mono-functional urban fabric and embodying mixed-of-land use. The developed cites, which decentralized industry to periphery -locally and globally- seems to have more opportunities for realizing mixed land-uses. The conventional rationale behind functional separation of industry has being faded away because of non-pollutant information-based industries integrated into urban areas in those countries.

In order to increase the compaction degree in existing cities, major land-use policy is allocating low-cost housing, shopping and service industries, which can not pay market rents. For archiving such a mix, there is no need to a special land use policy, but to an extension of the policies of the protection of historic buildings, open spaces and shopping frontages (Elkin et al., 1991: 22).

Another innovative land-use policy encouraging urban compactness by mixed-use is the 'performance based land development guidance system –PBLDGS-. It is widely being used in U.S. cities such as San Diego, California and Colorado. Opposed to restrictive traditional zoning ordinances, PBLDGS allows any urban functions on a specific portion of urban land as long as it is compatible and well suited with other adjacent uses. The main advantage is the production of more land-use combinations in traditionally zoned mono-functional urban districts (Cervero, 1998: 77). There is no doubt that this kind of a land-use regulation system requires a dynamic monitoring process with a pro-active planning system.

7.2 International Cases for Compact City Policies

7.2.1 The Netherlands: *Randstad/The Green Heart*

Except Asian city-states such as Hong Kong, the Netherlands is one of the most densely populated countries in the world. -446 inhabitants/km^2 in the year of 2000- Land is scarce resource. Presently, only 14% of the land is used for urban purposes and 70% is allocated for agriculture (Van Der Valk, 2002: 202).

To overcome congestion problem in the historic cities under the pressure of growth, a number of new towns as growth poles or satellite cities were developed throughout the country in the 1970s. Since, the poles were locating in the nodes of regional transportation network, the growth pattern was called as 'clustered de-concentration'. Although the development poles had been aimed to be self-contained settlements, they became oversize dormitory towns. In the 1980s, negative spin-offs of the former urban policies and the scarcity of land made Dutch planners compulsory quit decentralization policies. They moved toward a new policy package of a high-density urban renewal and redevelopment in central locations (Faludi et al., 1994: 185-192). In 1985, the compact cities become a national

planning policy. The National Council for Physical Planning defined the compact city policy simply as *"more than any before, aimed at concentration of functions (living, working, provisions) in the city*". This policy shift made the Dutch the pioneer of compact city movement. Hence, environmental policy system was controlled by central government and accordance to the acceptance of complex reality of the compact city as an environmental standard. (De Roo, 2000: 32).

Compact city policy has been coordinated with urban infill projects and new compact residential districts at the peripheral areas, which are accessible from railway and freeway network. Intensive use of existing urban areas, concentration of functions -instead of dispersion-, mixing of functions in high-density and the promotion of the use of bicycle and public transport were the planning and design principles of the developments (De Roo, 2000).

Then again, this development pattern has showed some handicaps. Rural communities and previous growth centers are left in indeterminate state. A number of open spaces in the cities have been taken up for urban infill and the quality of life occasionally suffers. (Van der Valk, 1992: 124). Since the housing areas were functionally segregated and unresponsive to the future changes in demand, an alternative model has been adopted by Dutch national policy. With this model, multi-modal transport nodes become the focus of development in a polycentric and network-shaped pattern. Actually, it is the synthesis of earlier approach of satellite growth poles and the compact city policy (Scheurer, J., 2001:182).

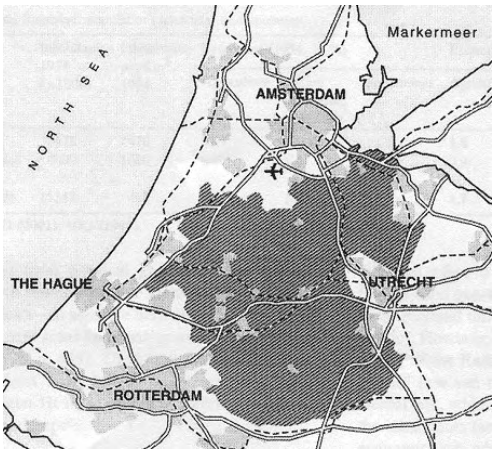


Figure 7.2: The Dutch Randstad and Green Heart
(Source: Kühn, 2002: 24)

It would not be an overstatement to claim that the most influential compact city planning experience in the world is Randstad, with its scale and political success. Randstad is urbanized western part of the Netherlands where the four largest cities of the country –Amsterdam, Rotterdam, Hague and Utrecht- locate. With horse-shaped, urbanized ring around central green area, called 'Green Heart', Randstad is

an open agricultural region locating in the middle of conurbation (Kühn, 2002: 23). Urban sprawl began to spread throughout the region in the 1950s, Dutch national committee intent to limit the rapid growth through the region. The term 'Greenheart Metropolis' was developed as a planning doctrine in 1960s and "The Second Report on National Spatial Planning" was revealed to achieve a decentralized concentration of settlement in the Randstad. (Kühn, 2002: 24).

Although Greenheart of the Randstad was economically the most favorable development zone in the country, the aim was to keep green buffers between various canters. Hence, the policy shift from the 'radiating effect' of urban ring ended with the consolidation of the ring itself: the model of the compact city (Ministry of Housing, Spatial Planning and the Environment, 1996).

Being implemented until mid 1980s, controlled dispersal perceived as the main cause of inner-city decline and a new policy was introduced for the Randstad in the "Fourth Report on Physical Planning Extra" in 1991. By the planning interventions based on the fourth report, large areas of the Green Heart have been preserved by concentration and remained predominantly open (Dieleman, 1997: 1714). To Faludi and Van Der Valk *"The compact-city policy can be considered a success…One of the main goal of the compact-city policy has been underscore the vital importance of the great cities for the country as a whole, and in this, too, it has been successful. Since the early eighties the compact-city concept has been cornerstone of provincial and national planning."* (Faludi et al., 1994: 191-92).

In policy perspective, overall success of Randstad remains in strong connection with well-developed planning tradition and spatial planning system of the Netherlands, which is embedded in welfare state policies. In this framework, a broad government control over both new residential construction and land acquisition for new developments. -almost all the land, which is subject to urban development is passed and controlled through public agency in the Netherlands - can be taken as the forces behind successful compact city policy of Dutch planning doctrine (Faludi et al., 1994: 1713).

7.2.2 Canada*: Vancouver, British Columbia*

Being decided as a regional growth mechanism to halt roadway building in the 1970s, construction of light rapid system -29 km in length- called SkyTrain finished in 1986 in Vancouver. Originality of the transportation plan is that it is not a result of a regional development policy but rather being a development strategy itself. The strategy can be defined as to improve the pattern of urban development. According to the plan, The Livable Region, metropolitan growth was directed along corridoric structure, along which new sub-centers would be focused. In the framework of the decentralization of CBD activities new employment centers, shopping facilities and high-density residential areas were combined. While doing this, CBD was regenerated with residential and leisure activities in a mixed land-use pattern. Success of the plan is Vancouver's relatively compact form.

When comparing other North American cities it has a higher population density -706 persons/km^2-, medium to high and with its radial corridors, strong CBD and concentrated urban form (Babalık, 2000: 89, 176).

The success of this compact urban development is its transit villages built around a series of transit station in a compact urban form. Thus, the railway corridor of SkyTrain runs through as a development corridor for Vancouver. The transit system uses the existing right-of-way, which was previously used as shipment railway. There were industrial areas along, some were vacant and some were in use. Along the railway corridor, station sites including pre-industrial areas were rezoned for higher density, mixed-use development within a decentralization strategy. In the areas where rail stops locate, joint development projects were introduced. Thus, the incentives such as development bonuses, tax reductions are used to attract developers to the site, while a number of public headquarters were relocated in development nodes (Babalık, 2000: 113, 149).

Figure 7.3: SkyTrain stations and high-density, high-rise development around.
(Source: Babalık, 2000: 153,154)

With respect to urban compactness, the prominent planning strategy, which makes Vancouver one of the prominent practices, was the scale and the characteristic of development, preferred. Rather a general, widespread redevelopment, the development was concentrated on publicly owned, railway affected vacant lands in a compact form. Compact structure was strength by land-use-transportation connection and green zones controlling sprawl within an urban containment policy. Intensification strategies were directed by specific aims:

- Creating subcenters with diversity and a definite character,
- Encouraging medium density residential development,
- Encouraging commercial, mixed use development,
- Increasing train patronage,
- Reducing the impacts of rail-generated traffic and parking problems (Newman et al., 1999: 222).

The new housing in development nodes ranges from high-rise towers to three-to-four-storey condominiums and townhouses. Mixed commercial, residential and office development are integrated within a few hundred meters to the stations. In addition, physically well integration of transit infrastructure and built environment dynamically in development nodes of Vancouver serves a model for compact urban design (Newman et al., 1999: 174-175).

7.2.3 Sweden: *Stockholm*

Formation of Stockholm's current physical urban structure goes back to about fifty years ago. After World War-II, Stockholm went through a physical transformation from monocentric to polycentric city structure. Since then, various satellite centers added to the polycentric system. From beginning, strong transport system of Stockholm have promoted a spatial regime with a finger form. Each center is composed of compact, walking scale satellite communities where various urban facilities are clustered within relatively small areas in the urban region. Each town has 40,000 to 100,000 people with commercial/office and some of high-tech business developments focusing on the integrated urban system. Compactness of the settlements was strengthened by urban rail system -Tunnelbana Rail Network- supporting town centers. Today about half of the population of the city lives in transit the satellite towns in Stockholm. (Pemer, 2001; Cervero 1998: 109-114).

The transformation through decentralization did not realize with the fall of population densities as common in Stockholm. This is because of the development process planned on a concentrated decentralization. Between 1980 and 1990 the central city, the inner city, the outer suburbs and the municipality as a whole showed an increase in density measures. There is so few cities have experienced such a process and this is the major reason behind the trend of absolute decline in automobile uses in the 1980s in Stockholm. It has only achieved in the city of Stockholm, which is the capital of the most prosperous country in Europe. Today, in all satellite towns, about two thirds of daily work trips are by transit, walking and bicycle (Cervero 1998: 304, Newman et al., 1999: 209).

Increasing densities in totally planned compact new developments are controlled by physical planning/design principles made Stockholm one of the 'best-practice' in the continent. Thanks to the principles cited below, car-free town squares, well-integrated community spaces and comprehensive network of open space could be built in high-density built environment.

- Locating workplaces close to houses,
- Minimizing distances from houses to shops,
- Concentrating service functions in easily accessible areas,
- Creating housing variety with two-storey dwellings with good ground contact, four to six storey around courtyards and ten to thirteen storey near stations,
- Urban environment in rich variations,

- Linked centers infused by coherent network of foot and bicycle (Newman et al., 1999: 173-174).

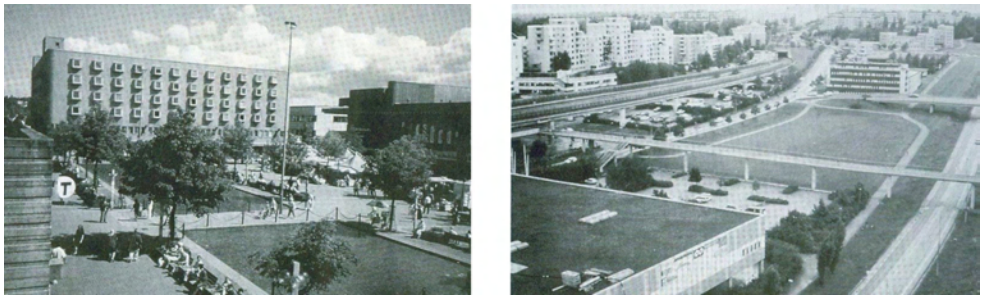


Figure 7.4: Two different compactness pattern in Stockholm's satellite settlements, Skarlholmen and Kista: Placemaker space versus high-rise in 'space'. (Sourse: Bernick, 1997: 295, 298)

To Bernick and Cervero, overall success of Stockholm is the direct results of the 'Howardian' planning/design approach, which is unique among many similar examples in Europe.

"…Unlike Howard's garden cities, however they were not planned as self-contained towns, they were more like dormitory villages, with the source of employment for residents usually near cities. Nor was transit a prominent future of early British or American new towns. It was only when Stockholm began building, after World War II, what were to be self-contained satellite communities surrounded by protective open spaces and served by rail transit that Howard's vision of 'cities of tomorrow' began to take form." (Bernick et al., 1997: 289).

7.2.4 Denmark: *Copenhagen*

Having a population about 1.7 million, Copenhagen's urbanization has always been subject to national policies of Denmark within a countrywide population of 5 million. Copenhagen's developing concept of urban expansion along radial railway corridors symbolizes the cult 'finger plan' development schema in planning literature. Till today, this metropolitan form is preserved and reproduced by Danish urban policies.

Today, Copenhagen is a good example for non-auto-dependant and pedestrian/ transit compact city in Europe. After World War-II, while British town planning principles based on new town developments were prevailing an alternative development strategy was adapted to Copenhagen: Directing urban development through well-defined corridors shaped by transit lines along and green wedges in between them. Strict zoning has performed the plan successfully until the 1970s. In 1973, Regional Plan updated the Finger Plan principles and proposed a creation of nodal centers interconnected by ring roads and transit lines. Suggested polycentric structure highly resembles to Stockholm. Yet,

compared to Stockholm, balanced and self-contained development was ignored in Copenhagen. Therefore, large retail centers in inner suburban ring and bedroom communities as outer suburbs were created (Cervero, 1998: 132-140).

In 1987, former regional plan was updated and a new planning strategy was introduced. Real conditions produced alternations for more compactionist solutions. At ministry level 'Limitation Directives' were set to channel urban growth within 1-kilometer catchments of existing and planed transit stops in 1993. By the new policy directives, 3,000 new housing units have being built in the concentrations of station areas. From beginning of urban concentration densities have been considerably increased by density bonuses and tax incentives (Cervero, 1998).

Containment of urban growth and producing new urban villages around the rail system has yielded an opportunity to utilize a set of urban design strategies for enhancing the vitality of urban public spaces. Each year, transforming them into public spaces reduces 3% of total central parking area. Today, the city has six times as many pedestrian-oriented areas as in the 1960s. Revitalization of urban spaces by creating walking-distanced-urban compactness made Copenhagen one of the world's best bicycle-cities, with integrated bike routes and pedestrianization (Cervero, 1998: 148, Newman et al., 1999: 204-206).

7.3 Urban Compactness in Developing Countries

7.3.1 General Characteristics of *Developing Compactness(es)*

Currently, an international perspective on sustainable urban form has been emerging. Hence, it has been proved that compact city approaches should be reinterpreted for each and every urban context within the framework of specific development dynamics and local urban agendas. Such a perspective inevitably takes the specificities of the cities of developing[7] countries into consideration. The basic difference point between developed and developing countries is derived from their features of urbanization process. While *the developed north* passed rapid urban growth rates in mid-twentieth century and entered a new phase, characterized by high level of urbanization and slowing down growth trend, *the developing south* is in the middle stage of their urban transition with rapid rates of urbanization and low level of urbanization. Therefore, the problem of urban expansion is much more

[7] Although we do not give a detailed characterization of developing countries, by the term we refer the countries in South East Asia, Latin America, North Africa and sub-Saharan Africa that are relatively in poorer improvement processes regarding human and economic development indexes, comparing early industrialized countries. See: Chaliand, G., "Third World: definitions and descriptions", http://www.thirdworldtraveler.com/General/ThirdWorld_def.html , Ray, T., 2002 "Definition of Developing Countries", http://teaching.ust.hk/~econ343/Lecturenotes/ch02.pdf

subject to developing world today. There are 20 megacities with over 10 million people each and 19 out of 25 largest cities are in developing countries (Girardet, 1996: 69).

In this context, compactness in developing world is commonly coupled with the high levels of environmental degradation, especially for high-density central city slums and peripheral squatter settlements. Ordinary development of compact metropolises with high density is the direct result of urban poverty and low level of infrastructure provision there. (Burgess, 2000: 12-13) Thus, the compactionist policies have to deal with the problems derived from *unplanned urban compactness* in developing countries. '*Developing compactness'* is not a strategically aim itself, rather it is an urban problematic to be managed, in developing countries.

Basic characteristics of compact urban forms in developing countries can be classified under the titles of densification, infrastructure, land capacity, transportation, land use and the intensification of activities:

- In general, urban densities are highest in Asia, high in North Africa and Middle East and low in Latin America -however there are the most four populous primary cities of the world with high-density urban settlements in Latin America-. Environmental aspects like scarcity of urbanisable land, limited ability to utilize fertile hinterlands have been prominent factors for the emergence of the compact of urban forms in most developing countries. Given densities are already associated with a series of urban problems like infrastructure overcapacity, overloaded sanitation systems, overcrowding, congestion, air pollution, lack of public open spaces, environmental deprivation and closer proximity to hazardous waste sites.
- Redevelopment of high-density low-rise urban areas through high-rise urban pattern has a risk to face unsustainable urban conditions. Poor infrastructure of previously dense areas with disorganized layout and fragile environment requires high costs of densification. This is the common problem of rapidly developing metropolises, which are in an integration of the world economy with a traditional urban space patterns in transformation.
- Most cities in Asia, North Africa and Middle East are characterized with low road capacity within urban compactness. There are low car use and emission rates per capita but high rates of car use and the volumes of emission per hectare. It produces negative effects on the quality of urban life.
- Standards of per capita open areas and green spaces are significantly low in developing cities. They are often frequently squatted or poorly maintained. To draw a compatible structure with urban compactness and urban green requires modernist high-rise high-density urban operations, which are socially and politically objectionable and too costly for many countries.
- Urban compactness in developing countries is supported by high level of mixed-use with easy access of a wide range of urban activities. It is because of structural characteristics of

developing urban economies. The share of informal sector in production, distribution and service activities is particularly high. Thus, artisanal production and small-scale workshops are extensively dispersed through urban fabric (Burgess, 2000: 14-19).

- Higher rates of population and urban growth keep density gradients shifting upwards over time. On the other hand, urbanization rates slowed down and decentralization occurred in the 1990s has weakened the shifts in developing country cities.
- Inadequate planning codes and regulations let uncontrolled increases in density measures. Subdivision of existing structures to accommodate multiply (even one family per room) is a common experience through increasing urban compaction in developing countries (Richardson et al., 2000: 26).

In such a framework, although compact city planning approach is conceived as a contribution for sustainable cities, whether developing cites, which are already highly dense, enjoy the benefits of compactness is questionable. By referring Latin American type compact cities, Zillmann points out that compactness of developing country cities is rooted neither in conscious urban design nor in a vision of sustainable city. It is commonly expression of unequal distribution of wealth and competition of masses desiring *central* location in urban space. Therefore, different from the dynamics of European model, developing compactness is the production of local knowledge and skills of self-regulation (Zillmann, 2000: 203-204).

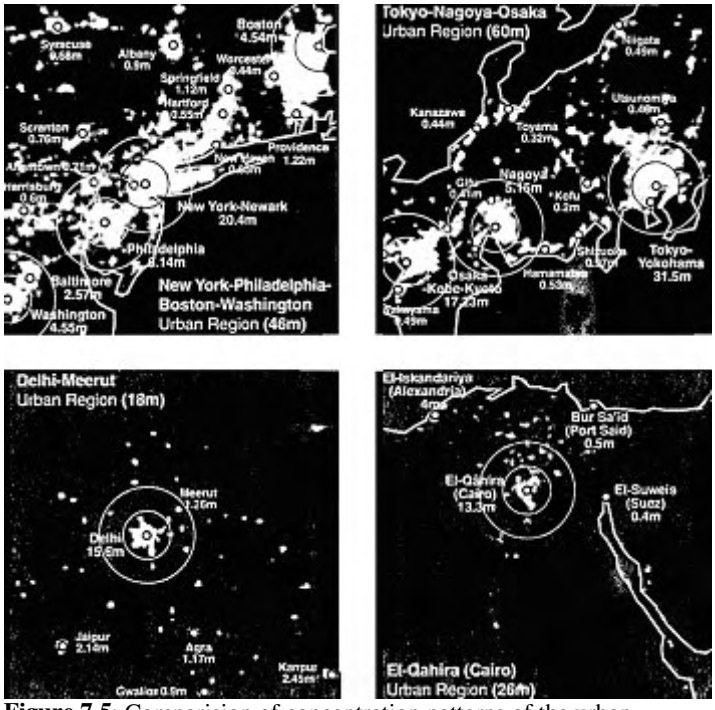


Figure 7.5: Comparision of concentration patterns of the urban regions in developed and developing countries. (Source: Jones: 2000: 43)

Basic differences between compactness characteristics of developed and developing settlement pattern at metropolitan level is about the issue of urban structure. In developed world, metropolitan cities are mostly integral parts of the polynuclear urban areas. Each metropolitan area tends to be formed by the coalescence of neighboring one. Whereas in developing countries, problematic of 'primate city' is much more reigning in the creation of a metropolitan form and its compactness. Although they have same even larger population than those of developed countries, megacities in developing countries are settled in highly concentrated urban areas and have higher population densities. Growth does not occur in the form of concentrated agglomerations, but in the process of the overspill of internally generated population and in-migration through adjacent peripheral areas. While the city cores are dense and overcrowded, growth spreads on the periphery also in a dense manner (Jones, 2000: 42). The growth of overall compactness without any multi-centrality provides no benefit for any probable public transit system development at metropolitan level. In this context, development of dense, polynuclear urban forms -network of compact cities- linked by transport can be an alternative development strategy to manage the urban agglomeration in developing countries. Additionally, intensification of low-density areas in the form of transit development nodes and dense developments along transport corridors are other ways to rationalize the 'developing compactness' (Jenks, 2000: 344).

In order to identify inherited structural characteristics of developing country cities, Richardson et al. adapted a data-set belonging forty-seven developing metropolises -including five Turkish cities- from different countries to the former study of Newman and Kenworthy, in the year of 2000. By their measures from collected data, they concluded two main statements on the structure of urban compactness in developing countries:

1. In general, central city districts are much higher in developing countries. Thus, the ratio of central city to suburban densities tends to be greater than those of developed countries. It is because of the fact that suburbanization/decentralization rates are slower than the rate of the compaction of existing built up areas. Mean ratio of central city density to suburban density is 38.5 for developing countries, while it is 11.9 for developed countries. [8]
2. Overall, the mean ratio of the central core area to the total metropolitan area for developing countries -0.23- is higher than that for developed country cities -0.15-.[9] (Richardson et al., 2000: 27).

Yet, those empirical findings do not coincidence with the formal/theoretical arguments, which are in favor of from urban compactness, for developing countries, in real case. Principally, compact urban form is accepted as a tool for the economies of space with smaller built up areas in size. But, in fact urban compactness is not a determinant factor on size of urban form for the 'developing's. Although

[8] This value is 114.22 for Ankara, 84.42 for İstanbul, 68.44 for İzmir, 217.77 for Bursa and 17.37 for Adana. (Richardson et al., 2000: 28)
[9] Related equivalents for Turkish cities in the case are 0.11 for Ankara and Adana and Bursa, 0.35 for İstanbul and 0.06 for İzmir. (Richardson et al., 2000: 29)

supply of agricultural land is not an elastic factor in most developing countries, encroachment of urban development through prime agricultural and natural land -such as the Nile Delta in Egypt- is still a problematic issue even with a high degree of compact urbanization (Ibid: 33). Another reason for the gap between city size and urban compactness is growth pattern of high-density cities, which have enough land to develop. For example, while the dispersion ratio of Los Angeles is less than 1, the highest density city Bombay has the ratio of 3.08 (Richardson et al., 1999: 13). Such a development pattern can be called as 'high-density sprawl', producing a *limitless compactness.*

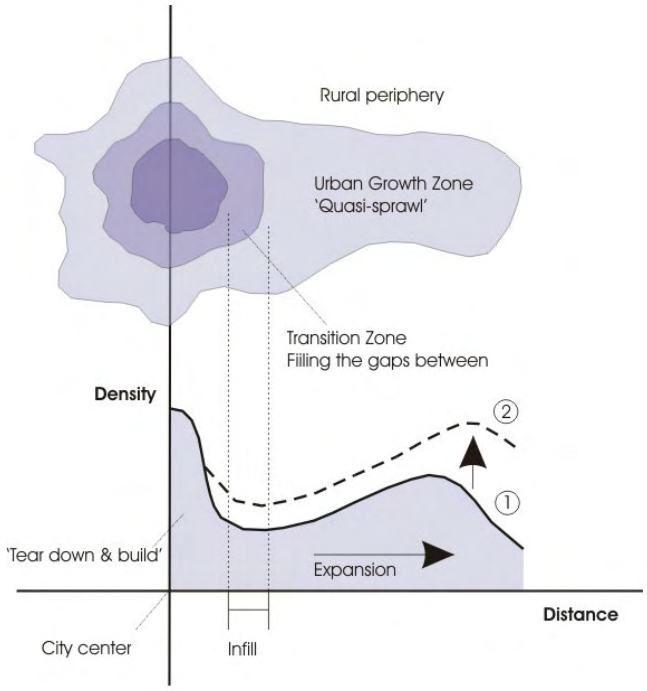


Figure 7.6: Density surface gradient of developing cities.
(Adapted from: Bilsel, 1977: 57)

In this sense, urban expansion and densification are not a controversial processes for developing cities like developed cities, but complementary with each other. Unlike in western cities, the density surface gradient does not tend to decrease but increase or keep constant toward urban periphery (Tekeli, 1986: 149). Since provision of urban land is scarce in undeveloped countries and people try to locate closely to urban services in existing urban fabric with insufficient transportation infrastructure, a development pressure emerges on inner city urban land (Bilsel, 1977: 56). This is the major dynamic of 'oil drop' urban fabric with a homogenously and intensified/expanded urban body.

Another dynamic of such a formation is underdevelopment of housing production process, which is basically, depends on small entrepreneurs rather than organized big housing cooperations. The limited capacity of partially realized space production results in an accumulation of existing urban fabric by

further additions. Such an expansion at certain degree of compaction causes an inflexible city structure and bulk urban body, which is difficult to be handled and closed to fallowing structural transformations.

Another important ascertainment of the study of Richardson et al. is on transportation characteristic. According to data set on transportation for developing countries -modal splits and shares- many countries are very dependant on public transport. Yet, some of the poorest country cities like Chinese cities or Dhaka, Bangladesh –not in the database- do not rely on public transport. Although urban compactness provides a contribution to mass transit modes it is not enough condition for its occupancy like in the case of some developing cities. Therefore, socio-economic conditions explain much more about the use of non-auto modes than the indicators of urban density in developing cities. Hence, transport costs, which have a share of up to 10% of household expenditures in the developing countries, compel people to walk (Richardson et al.: 31).

It seems that the problematic of urban compactness is differed in developed and developing countries with respect to the management of urban space. In general terms, while developed countries aim to rediscover urban compactness by structural transformation of urban fabric through more compact urban forms, in developed countries main endeavor is rationalizing pre-existing urban compactness. While the benefits of high densities, in our study, are still relevant principally in the context of developing countries, poor institutional capacities of developing countries become a preventive factor to turn negative real conditions into strength and opportunities. Economic development process directed by global market mechanisms is experienced in a short and accelerated phase. Such a transformation -with inadequate infrastructure and environmental laws/controls- in the 'peripheral' world cities make urban space much more problematic then ever.

This problem is much more apparent in the cities aiming an integration to the network of 'Global Cities'. The manipulation of built form is being conducted on the traditional urban textures by creating a new language, which 'communicates globally'. In Asian cities, like those in China or Malaysia, such a physical transformation through high-rise compactness is not only a result of foreign investment pressures, but also aimed powerful symbol supported by the governments. One of the well-known examples to that process is the city of Shanghai, China. Locating at mid-point of the Asian economic corridor, Shanghai is supported by Chinese government to encompass private developers within the national reconstruction program. Thus, a foreign-led high-density urban development norm has been accepted in Shanghai, since 1990. Within ten years, formerly non-commercial urban area called Pudon -523 km^2 in area- became a focal point of the rapid development as a result of overseas investments. Thus, the district fell into the *'instant city'* category within ten years (Lau et al., 2000).

Figure 7.7: Panoramic view from the Pudong Area in Shanghai, China: a 'compact urbanity' of multinational finance capital in transforming Asia.
(Source: http://lycos16902.w15.lycos.com.cn/Pudong_Panorama_Zoom_DC.jpg)

By referring our previous interpretation on the metaphor of urban compactness ascertainment of Lau et al. would be complementary about the issue:

"...The spatial perception of many traditional Chinese cities has dissolved under a mirage of modernism in Pudong. A new locale for socio-economic development and culture is emerging, undoubtedly driven by the power of real estate embedded in globalization. High- density urban development successfully generates the image of globalized order of urban space, urban syntax and form. While high densities and a global image do not necessarily make either compact city or one that is sustainable, these 'instant' cities may still become exemplars for rest of China, and perhaps, for rest of the world." (Lau et al., 2000:114).

Contrary to the cities like Shanghai, where urban compactness is a product of coordinated process, other prototype of 'developing compactness' becomes after the long process of *human* interventions, which can be called as *'spontaneous compactness'*. Searching for density measures in developing world, Acioly, takes Egyptian cities as such kind of an urban form into consideration. Prominent Egyptian cities, like Cairo and Giza, are exemplified by extreme form of urban compaction. Currently, gross density of Cairo is at an average of 400 inhabitants per hectare. This is higher than those of New York, Bangkok and Hong Kong, while gross densities of informal settlements in Giza are up to 1000 pph in some cases (Acioly, 2000: 129).

Figure 7.8: Typical urban pattern of Cairo: *Informal copactness* and Aerial View of Hebron, Palestine: *Medium-rise compactness* in the Middle East.
(Source:http://www.photovault.com/Link/Cities/jAfricaNorthern/Egypt/, http://luciensteil.tripod.com/katarxis02-1/id5.html)

Those density measures are characterized in urban space with irregular built form, narrow roads and alleys, mixed-land uses and compact building blocks -in some cases six-storey informal buildings covering 100% of plot area-. The result is inadequate housing and poor environmental conditions such as lack of public space, air pollution and congestion. The motive behind this urban formation is the scarcity of urban land. %95 of total land area is desert and there is a great demand on urban land. Transformation of privately owned fertile agricultural land is under military jurisdiction. In this case, replacement of villas by high-rise buildings and active process of informal subdivision of agricultural land meets current development need (Acioly, 2000: 128-129). The fact that nearly %90 of total urban growth in the country occurred informally is the reason why that sort of urban form is called as 'informal urban compactness.'

Figure 7.9: 'Expansive compactness' of the urban form Bangkok, Thailand.
(Source: http://www.fotosearch.com/SIX123/009as2/#)

Another version of the uncoordinated compaction in developing country cities is Bangkok, Thailand. Contrary to Cairo, based on low-rise urban compaction, Bangkok represents a high-rise version of compact urban form. Creation of the urban fabric of Bangkok is the result of weak planning controls. The production of the process is high-rise development randomly dispersed throughout the urban area, mostly along arterial roads. Densities in some districts of the city contain up to 1.000 persons per hectare (Moor, 2000: 285-287). In this circumstance, Bangkok case of urban compactness falsifies a Euro-centrist compactionist argument that high density principally facilitates more viable and effective public transport provision. Unless a clear differentiation of the density spectrum within urban fabric is secured, public transit systems cannot be feasible. Urban form of Bangkok is an example to such a case. In Bangkok, car dependency is significantly high and in the trend of increase with low fuel prices, whereas road capacity per person in the city is low and high densities make it impractical to increase road capacities. Random formation of urban compaction constrains an effective public transport system (Jenks, 2000: 347).

The real reflections of 'expansive compaction' in Bangkok case are hyper-congestion, increasing travel time -average 4 hours per day-, poor parking capacities, low levels of walking and cycling -despite high density-. Although the pollutant emission per capita is below the average -3.306 VKT- [10], it is higher than average for per urban hectare -493.612 VKT-. In American cities, those measures are 12.355 and 173.604 in turn. It is important that high levels of CO_2 emissions per capita in American and Australian cities influential factor in urban life comparing Bangkok typed Asian cities like Manila and Hong Kong. The issue is basically spatial: Low-density, dispersed settlement forms balance higher level of emissions per capita in the cities of the U.S. and Australia, unlike Asian counterparts (Barter, 2000, 277-278).

Converting the challenge of uneven urban compactness into an opportunity of viable public transport for Bangkok type developing cities depends on insertion of mass transit system into existing high-density urban fabric by creating transit development zones (Jenks, 2000, 347).

Even though the compactness of cities in developing countries is mostly not a product of conducted planning process, rather a result of objective conditions -economical and cultural-, some planning experiences dealing with compact urban form is worthy to be considered as the case studies for developing metropolises.

Today, there are four major spatial models and strategies to modify urban structures in developing countries. These strategies are aimed to transform compact urban forms and channel compaction process through the sustainability standards. They are based on structural transformation of built environment and restructuring urban mobility systems.

[10] Emission factor refers the measure of vehicle kilometers traveled (VKT)

1. *High-rise, high-density redevelopment*: It is widely preferred in South East Asia. Efficient mass transit use, development of self-contained new towns, and the sufficient provision of public space makes experiences environmentally and socially sustainable development alternative. Since its recommended spatial proximity alienates some cultures in the world and it requires a capital-intensive trend, it is not commonly applicable in all developing countries.
2. *Creation of 'concentrated decentralization'*: The shift from mono-centric to polycentric urban structure by densification of activities in selected sub-centers connected by development corridors. At neighborhood level, encouraging urban villages with adoption of intensification policies.
3. *Linear 'transit-oriented development' model*: Restructuring of mobility system by model shift to public transportation. Channeled urban growth through selected structural axes, enhanced by mass transportation routes and interchange nodes. Coordination of land use and transportation planning process.
4. *Traditional infill*: Regeneration of urban core, historic areas and vacant urban land by intensification and densification (Burgess, 2000: 21).

7.3.2 International Cases for Compact City Policies in Developing Countries

To Marcotullio, high-density cities of developing world -especially Asia Pacific cities- can be classified in three: 1. Those that are transit oriented, 2. Those that are motor-oriented, 3. Those are low or non-motorized (Marcotullio, 2001: 13). Among them, the first mode of urban development as prototype of *developing compactnesses* can be considered as the successful example of sustainable centrist planning policies in developing countries. After examining general characteristics of them above, we take the first group of cities as international cases.

7.3.2.1 Hong Kong

As the world's third largest financial center after New York and London, Hong Kong's service-oriented economy has produced a specific kind of urban compaction with high-density, high-rise and multiple intensive land use pattern: *super compact* urban form.[11] In this form, Hong Kong is the most compact city in the world with the density of 6100 inhabitants per km^2. The basic motive of Hong Kong typed-urban compactness is the characteristic of globalized local economy. An immense flow of capital and coming out surplus are not converted into industrial investments in Hong Kong. Rather, it is directed to the investments on urban infrastructure and facilities improving service quality and management of the city. So-called *super compactness* supports the feasibility of service-oriented economy, spatially. Since an urban pattern with homes and workplaces in close proximity with each

[11] the term belongs to P. Newman and J. Kenworthy. (see: Newman et al., 1999: 195)

other was encouraged, travel time and distances has been shortened. In fact, this kind of an urban form in an industrial city would not as feasible as that in Hong Kong (Zhang, 2000: 249).

The concept of verticality is the determinant of space structure, which makes Hong Kong a real 3-dimensional sky city supported by high-rise commercial developments and double level circulation systems. An urban system with high density, high floor-to-area ratio -plot ratio-, and mixed land use enables short distances or efficient public transit system in Hong Kong. Physically short average distance between home and work decreases the travel time. The average travel time between home and work range from 30 minutes to an hour while it is about 90 minutes or more in similar metropolises of the Far East, like Tokyo (Habiforum et al., 2002: 52-53).

High level of mobility within urban area is compensated by heavy rail systems serving around 11 million passengers commuting daily. With a high capacity, low marginal cost and less polluting service, rail systems has a high priority. By 2005 50% of all public transport journeys will be made on railway systems. (Mahtab-uz-Zaman, 2000: 265). This is the factor that makes compactness a sustainable urban form in Hong Kong.

Figure 7.10: Skyline of central Hon Kong (above) and high rise housing development in urban fringe Hong Kong (below)
(Source: http://www.landscape.com.hk/hk_pd/hkpd.htm)

Like many other developing countries, urban compaction of Hong Kong is the response of the combination of geographical thresholds on urban growth -topographic constraints- and the rapid growth of population. Because of the fact that urban compaction of Hong Kong goes before about thirty years, when western urbanists were identifying high density high rise urbanism as the source of urban problems such as crime, vandalism and social breakdowns. While from 1947 Plan, New York's high-density approach had been accepted as an urban approach avoided, dispersed urban development strategy tent to be obstructed in 1970s, when the proportion of urban built-up areas doubled within ten years in land scarcity. Then planners and politicians recognized the need for high-rise high-density

approach as a tool for overwhelming urban dispersal. Therefore a strict total control of land supply and use has become the basic policy of authoritarian government of Hong Kong, which owns all land in the region (Zhang, 2000: 247-250). High rates of land prices in the central areas made low and low-middle income households displace to urban fringe and to rural areas after World War II. Combined with massive migration from the Mainland China, displacement of inner area urban people caused a large number of squatter areas in urban fringe. Hence, government intervention to provide public housing emerged in 1950s and it has being kept till today. 51.7 % of the population lived in public housing in 1999. Like commercial development, public housing has developed in the form of high-rise urbanism, even developed by private sector, today (Zhang, 2000: 249-250).

Figure 7.11: Dual structure in urban space: Antagonism between high-rise compactness of public housing and low-rise compactness of former squatter areas in Hong Kong.
(Source: http://www.photovault.com/Link/Cities/China/HongKong)

In opposition to common judgment and the perception of high-rise urbanism as negative manner in western countries, a 'high-rise culture' has been evolved in Hong Kong with a high degree of common satisfaction. It is because of the success of the management of urban compaction. The degree of compactness of Hong Kong makes workplace and open spaces within walking distance and keeps a vide range of urban facilities in an easy reach. Minimizing excessive individual movements within urban area is the factor of urban compactness to improve the quality of life, which differs Hong Kong from many developing compact cities. Since 64.49% of total daily trips are made within the urban center/harbor area (Zhang, 2000: 251).

7.3.2.2 Singapore

Singapore resembles Hong Kong with reference to its urban image based on Asian high-rise compactness. The main drive behind the compactness of form is also the scarcity of land available to be developed. Different from Hong Kong case, Singapore represents a multi-nodal urban form at macro scale, although it was produced by the coordination of urban development and transit policies.

Figure 7.12: Singapore's core area: Typical South east Asian high-rise compactness.
(Source: http://www.photovault.com/Link/Cities/Asia/gSingapore/show.asp)

The formation of urban compactness at metropolitan level in Singapore goes back to the 1970s. In that time, advises from World Bank and American consultants were in favor of upgrading bus services, which is cheaper than fixed transit systems to solve increasing mobility and congestion problem in the city. Contrary, Singapore officials chose the policy alternative of UN Development program based on rail system. The aim was direct urban growth through transit oriented urban form. Hence, buses alone would not be sufficient alone to control metropolitan development (Newman et al., 1999: 193-194).

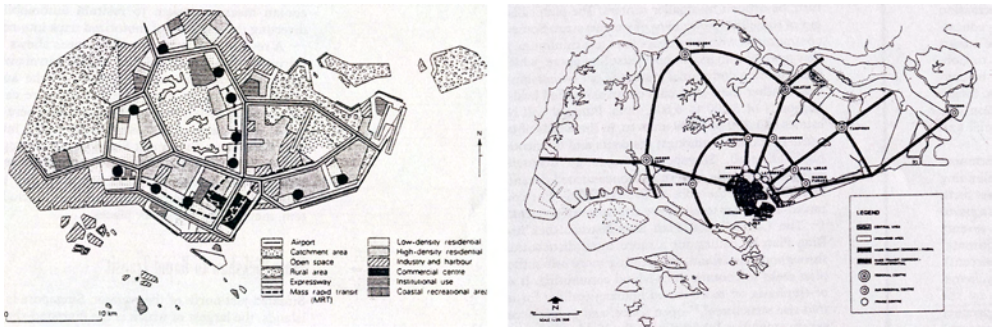


Figure 7.13: 1971 Ring Plan- strong centered development pattern and 1991 Rai Transit Plan- radially desentralized concentrations. (Source: Cervero, 1998: 159, 174)

With this standpoint, a conceptual plan was approved in 1971. The plan schema was aimed to configure high-density housing, industrial and urban centers linked by high-capacity transit network. -Mass rapid transit/MRT-. In 1991, Long Range Transit Plan reproduced the form, which was determined by the previous plan. Ring concept was modified by 'constellation' schema. A hierarchical pattern of urban centers connected by MRT was organized. In this system, which can be as called concentrated decentralization, while existing central area remains focal point of country's economy and physical structure, four regional centers and surrounding fifty new towns were designated throughout the urban region. Strategically, the main planning objective is to relieve overcrowding in the core (Cervero, 1998: 159-173).

Self-sufficiency is the design criteria of the new towns in Singapore. Each contains 4,000-6,000 dwelling units and school, retail and recreational facilities. An efficient self-sufficiency is ensured by the urban design codes incorporating high-density and mixed-land use pattern. Land-use planning is utilized to encourage non-auto modes. Close integration of rail stations and decentralized commercial districts enables high level of local access to nodal centers within five minute walking distance. Compact, mixed-use cores are supported by extensive pedestrian and cycling network (Cervero, 1998: 160-161; Newman, et al., 1999: 193).

7.3.2.3 Brazil: Curitiba

Planning experience lived in Curitiba is not only a 'best practice' for developing countries but it can also be considered as one of the significant urban sustainability model in planning literature: *'third world city that works'*. Its originality derived from the success of linking transport, land use and housing strategies in the frame of energy saving compact urban structure.

Curitiba is a medium-size metropolis -approaching 2 million in population- in Brazil. Since 1965, the city has applied a certain development strategy in a decisive perspective. Cornerstone of the development strategy is based on the aim of energy saving and reduction of congestion by encouraging public transport. This planning aim was realized by a series of densification and structural compaction policies in such a city that has the second highest level of car ownership in the country. Restructuring urban fabric referred a shift from linear urban growth schema to radio centric one. Formation of a north-south axis, called 'Structural Axis', is tangential to city center. It was the final product of the transport strategy of Curitiba Master Plan in1965 (Acioly, 2000: 132).

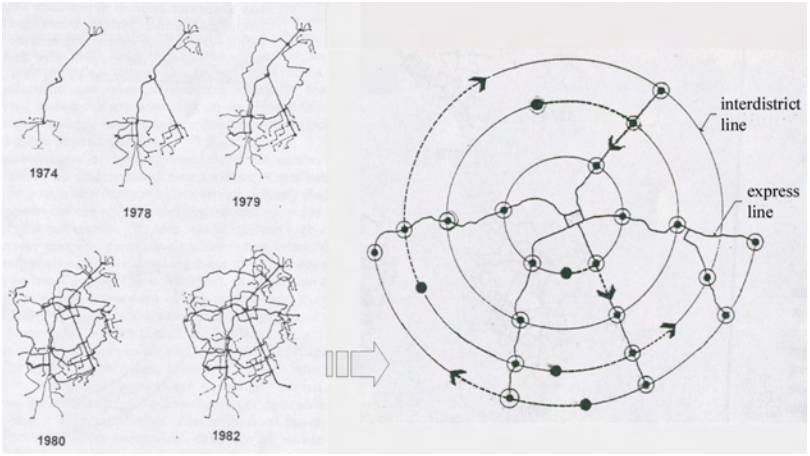


Figure 7.14: Evolution of Curitiba's urban structure and the service-web created. (Cervero, 1998: 277-278

Necessity to such a planning schema was derived from controlling the rapid urban growth occurred in the 1960s and the fear that Curitiba would become a second Sao Paulo, sprawling metropolis. Instead, integrated transport and land-use strategy was introduced. The strategy, based on Structural Axis, which prevent growth in all direction rather along designated axis, dynamically evolved in years and eventually five new 'structural axes' emerged. Within new plan schema, the linear corridors function as high-density pathways for new growth and carrying twenty intermodal stations along (Cervero, 1998: 266-269).

Figure 7.15: Skyline of a structural axis in Curitiba: A legible density pattern through linear compactness. Axis becomes an edge in between the districts.
(Source: http://www.worldisround.com/articles/12370/photo19.html)

By means of the former structural axis, reproduction public transport routs could be available and it allowed new structural axes as extension. The operated public transport system on the network is based on busses. In order to expand bus network through densification, policy of land acquisition was introduced. Densification, as the prerequisite of public transport, was conducted by encouraging mixed land use and the promotion of high-density housing development along the main route. As a result of optimization of land, infrastructure and public investment the floor area ratios –FAR- was increased from 1 to 6 in the gross population density of 600 pph. Average gross density along the structural axes are up to 100 dwelling units per hectare (Cervero, 1998: 285; Acioly, 2000: 132).

By densification policies, 'wedding cake' density pattern was produced. Through the outer distances from public transport routes, urban pattern was converted into low-density low-rise settlement type. In this system, high volume roads are buffered from low-density residential areas by high-rise series of high-rise buildings. Such a differentiation in density is coordinated with a continuous network of urban green, which contains public services and amenities. Advantage of Curitiba-type space structure is that there is less road space per unit area than new urbanist pattern. (Cervero, 1998: 274-276) Actually, this is the positive factor supporting overall compactness of the produced urban form produced.

The reason why the development structure of Curitiba has been accepted as a model in planning literature due to establishing an urban area utilizing existing line of development along the main routes. Having a kind of corridoric urban structure previously, Curitiba was successfully restructured through careful integration of high density and mixed-use on transport corridors. As result, intensive high-density development was practiced neither in the congested city centers nor in peripheral sub-centers where integration of transit system much more difficult (Jones-Lloyd, 1996: 299). Therefore, the critiques towards intensification are falsified by means of bringing fragmented urban areas through linear concentration -linear compactness- in the model of Curitiba.

CHAPTER 8

URBAN COMPACTNESS IN TURKISH PLANNING PRACTICE IN THE CASE OF ANKARA

In order to achieve a conclusion about the relevance and vitality of urban compactness in Turkish context, Ankara is taken as the case study area of the thesis in this chapter. The performance criteria of urban compactness come from previous theoretical framework of the study. These criteria are mobility pattern, travel time/distances, automobile dependency and the level of gasoline consumption. Before evaluating the degree of urban compactness of Ankara, master planning processes, which determined today's city structure and urban form are discussed The real conditions, which were directed by five master planning experiences and the ideological motivations behind them are also examined. And then, the transformation pattern of Ankara macro urban form is discussed in the second section of the chapter. These argumentations are supported by empirical findings of the sustainability criteria about the urban form. Testing the degree of urban compactness is conducted by comparing Ankara with the average measures of World cities. Thus, both positioning Ankara in the international compactness index and appraising the current developing preferences by plans are aimed as the final stage of the study.

8.1 Re-evaluation of the Development Plans of Ankara With Respect to Urban Compactness As A Fact and Idea

8.1.1 Jansen Plan (1932)

The development plan, prepared by Jansen in 1932, is not the first plan proposal for Ankara. Although, Lörcher Plan (1924) is the former planning schemas for historical core and the new city extension, Jansen Plan is the first planning experience, which fundamentally directed urban development in the foundation process of the capital city of modern Turkey. The plan was the direct result of the urgent need for a sufficient infrastructure and physical structure of modern urban functions of the republican city. The main target was to transform the rural landscape into an urban entity.

In the mid-1920s, there were two kinds of urban fabric in the city. First one was compact Ottoman housing settlement concentrated around the castle (citadel). It was reproduced by additions and subdivisions partially in the republican era. The second one was new generation of settlements with four to five-storey houses diffusing to traditionally settled areas. In those conditions, traditional core of the city was becoming denser day by day and urban standards were diminishing (Tankut, 1993: 53). In 1927, urban density was 248 people per hectare in the existing urban area (Altaban, 1986a: 126).

When Ankara Urban Development Council arranged the planning competition in 1928 by requesting the drafts from three European urbanists –L. Jausseley, J. Brix and H. Jansen-, the population of the city was 75,000. Population projection of the plan was 300,000, to be achieved in 50 years. In order to achieve a holistic schema, 400 hectares of vacant land in the south was already expropriated to direct growth to the south (Yavuz, 1981: 30).

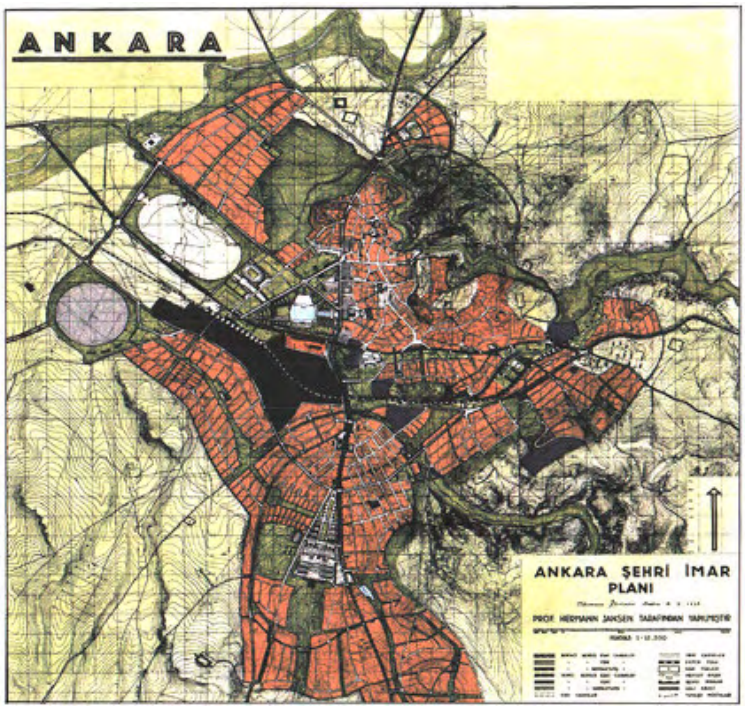


Figure 8.1: Development Plan of the City of Ankara by Prof. H. Jansen-1932

In the preliminary plan report of Jansen, it was conditioned that public health was a social policy, which could be ensured by physical transformation. Such a transformation was realized in an open system-plan schema, which had shaped by the configuration of empty spaces, valleys and ridges as urban green. In the report, Jansen clearly declares a disurbanist and anti-compact point of view. For him, settlements should not principally be dense but loosely woven. Thinning out of urban pattern is in order to guarantee urban hygiene (Jansen, 1929: 139-140). In the plan, sport fields and recreational areas activate the intervals. Furthermore, he cautions local government against *intensification* in

future. To him, public health should not be sacrificed to demands for the economy of space by consolidation. Such a view on modern hygiene-city is compatible with the prevailing urban view of modernist activists of early Turkish Republican period. (Çalışkan, 2003: 59)

On the other hand, in the same report, Jansen strictly warns against the speculative demands for undefined urbanization. To him, the plan boundary and the control of urban development legally within the urban fabric were essential for the success. Otherwise, *scattered* development in outer areas of the city would have disturbed the substance of the plan (Jansen, 1929: 157-58).

By 1935, pressures for the development in outer parts of the plan boundary had increased in real sense. After the partial plan of cooperative housing development in an outer vacant urban land -Bahçelievler-, in 1935 Ankara Urban Development Council officially declared that as long as guaranteeing the further plan development conditions, developers were allowed for any construction in the areas which had not had an approved subdivision plan. Furthermore, by combining a plan area -1500 ha.- with municipal boundary -16,000 ha.- strictly defined development margins became invalid in 1938. This is the basic reason of the resignation of H. Jansen, the author of the plan, in 1939 (Altaban, 1998: 46-47). Hence, with the decision, planned development was left to speculative tendencies of landowners and the essence of urban image assigned by the plan was primarily lost.

The main reason of the speculative pressure for development was rapid urbanization. Thus, projected population of 300,000 was already achieved in the beginning of the 1950s, however it was assumed to be achieved in the year 1978 (Altaban, 1998: 53). Another reason for the tendency for partial development out of the inner city was that land prices within plan area increasing rapidly were unaffordable for middle-class families. As a result, low-density cooperative housing areas were compelled to be located in urban fringe. Therefore, total urban area was already increased to 1900 hectares and gross density level decreased to 115 p/ha in 1944 (Altaban, 1986a: 130).

The urban image put forward by the plan was based on low density, low-rise settlement pattern within separately defined neighborhood units. Circulation system was arranged to be narrow and short to maximize economic benefit. There is not a clear compatibility with automobile age in design. Design geometry and the pattern resembles to Garden City models. Even though the design style resembles much more the culturalist approach, rather than a progressist one, such a style did not produce a continuous and intensified urban physical image in real. While, building units were positioned within a readable outer boundary, intensification of them was being kept in a certain level, which does not make urban fabric compact in the 3rd dimension as in the 2nd dimension with a compressed urban fabric and well-defined boundary.

In final report, Jansen presents family houses as the ideal of ‘new urbanism’. He finds rental housing ‘irrational’ and ‘erroneous’. Therefore, he envisages all new buildings not more than three storey and all porches and basements should be prohibited. (Jansen, 1937: 13-14)

Figure 8.2: Existing typical houses, prepared by Jansen Plan (Source: Personal archive)

One of the basic concerns for Jansen is the accommodation of all future population increase within the borders of urban development area without any distortion of the 'framework' as much as possible. However, here he puts himself into a dilemma. First, he states that urban growth cannot be limited physically due to improving capability of mobility by automobiles. Additionally, intensification in a limited urban land would result in an unwanted congestion and crowdedness. On the other hand, he also asserts that a city should not exceed beyond the limits of walking distances, especially for well accessibility to natural peripheries. He also points out the danger of urban expansion regarding military security conditions such as air attacks etc. (Jansen, 1937: 45-46)

There is no doubt that, Jansen plan gave basic structure to the inner city and early formation of urban form for years. In that sense, when considering its urban image both in district and city scale accordingly, the plan represents a distinct approach to the planning experience of Ankara

8.1.2 Yücel-Uybadin Plan (1957)

In 1956, the population of Ankara was 455,000, the settled area was 3650 hectares and the density was 125 persons/ha. In 1955, an international competition was announced. The competition resulted in the first rank of the plan proposal of Nihat-Yücel Uybadin. In this plan, which was approved in 1957, 11.000 hectares of urban area was coded. The plan projected a population of 750.000 for 1977. The plan was approved in 1957. (Altaban, 1998: 53) As the second development plan of Ankara, the plan did not have a vision for the transformation of the city within a rapid growth process. Hence, the plan was standing at the legitimization of existing development trend of the period and assumed urban form as an entity to be conserved.

Yücel-Uybadin Plan proposes a homogenous city closely packed and pressed within the municipality boundaries. Inner city structure is rather organic, which reflects the garden city tradition. It is also in continuity with green belt ideology of garden city tradition. (Günay, 1992a: 34) Physical emphasis on bounded community within extended scale is an indicator of such a reading of urban form proposed by the plan.

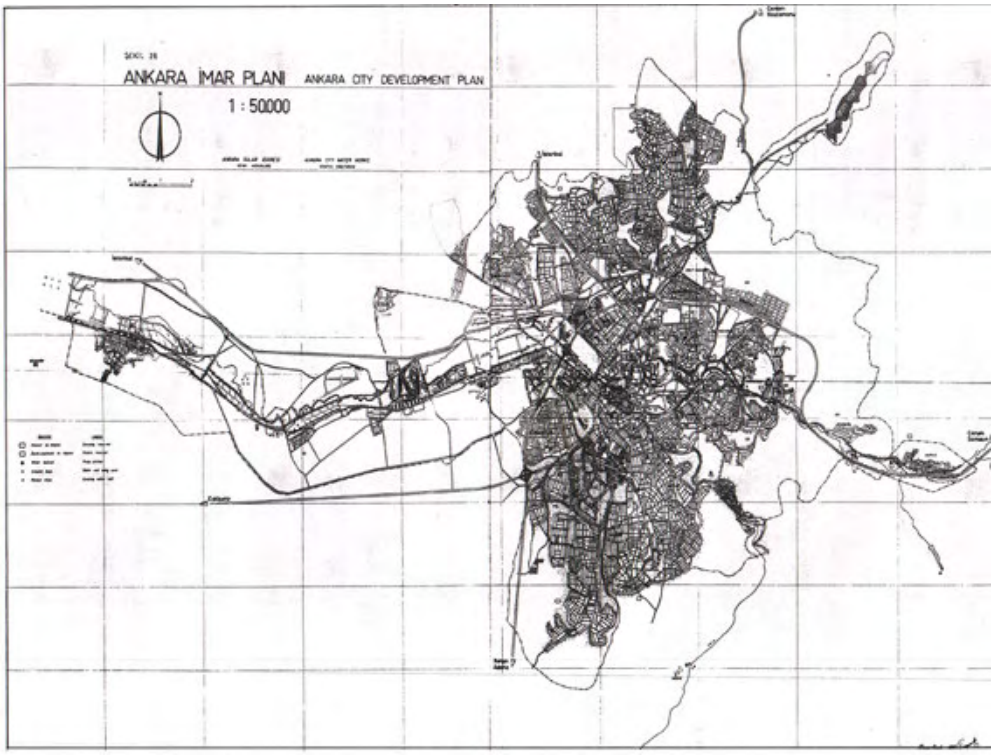


Figure 8.3: Plan diagram of Yucel-Uybadin-1957

Local socio-political actors mainly determined the formation of the urban form in the 1950s. Different from the 1930s, interest groups were much more effective than before and they were both decision makers and pressure groups who have great expectations from the rent of urban land. This was making a leap-frog development alternative impossible. Furthermore, the municipality was not capable for developing separated urban fabric out of the inner city, just because of the lack of vacant land stock. (Altaban, 1998: 54)

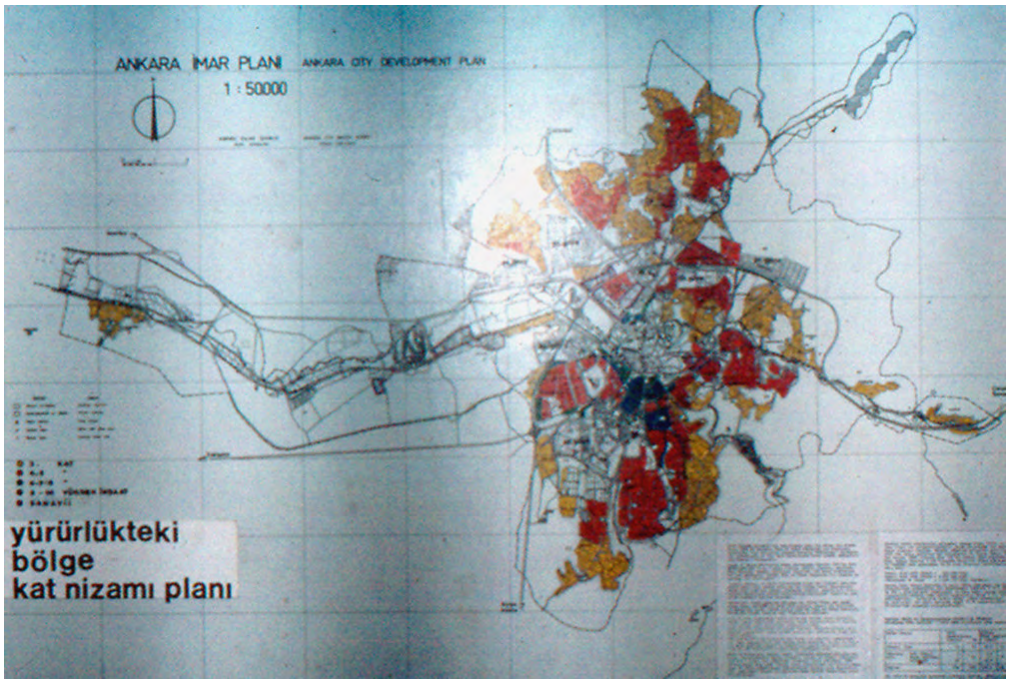


Figure 8.4: Plan schema of Bölge Kat Nizamı Planı-District Height Regulation Plan- 1959

Just after two years of the approval of the plan by the ministry, the governor and mayor of Ankara submitted a plan revision proposal, named as 'Bölge Kat Nizamı-District Height Regulation', in 1959. It was a positive response to density requisitions by additional development rights for number of floors. The plan proposal was approved in 1961 in spite of the counter-argumentation of N. Yücel, warning against low-standard *apartment-city*. As a result, the building heights were doubled and tripled by a high-density apartment type housing, especially in Bahçelievler, Emek, Y. Ayrancı, Maltepe, Küçük Esat, Çankaya and Aydınlıkevler. While the net density level in those districts were proposed as 200-350 p/ha by Yucel-Uybadin Plan, it increased as much as three times to the level of 600-650 p/ha. (Altaban, 1986a: 134) –see: Table 8.1- Even though, density levels were relatively low and in balanced distribution through urban fabric, further developments both increased total surface area of the city (up to 14.000 ha) and unevenly increased density surfaces. Excessive housing supply processes up to the mid-1970s caused the settlements around the CBD to be highly concentrated (Tekeli et al., 1986: 50).

Table 8.1: Plan proposal of the net population densities of selected districts and their realization in 1977. (Source: Çakan et al., 1977: 46)

District	Proposed net population density of 1957 Yücel-Uybadin Plan	Proposed net population density of 1968 District Height Regulation Plan	Net densities in 1977
Emek	378	1124	532
Gaziosmanpaşa	390	1123	469
Cebeci	447	1122	650
Çankaya	321	1070	477
Maltepe	426	1064	529
Y.Ayrancı	473	1051	634
Aydınlıkevler	160	962	410
Bahçelievler	69	915	317
Küçükesat	304	894	586
Mebusevleri	148	888	225
Etlik	245	737	532
Keçiöğren	100	665	277
Yenimahalle	358	537	379

From the 1950s, 'build-sell' type of construction, as the most critical development process for the Turkish urbanization had come into agenda. It is still dominant in most Turkish cities today. During those years, high land prices brought about a new type of land ownership called as 'fragmented ownership'. Middle-income families could not afford to build 1-2 storey-houses by themselves. This type of ownership was complementary with the 'build-sell' system. In the emerging system, individual production of multi-storey apartments by private developers ended with multi-ownership in one building plot -vertical ownership-. The Law of Flat Ownership legally defined new sort of ownership in 1955. In the new ownership pattern, there can be owner of one unit within a multi-unit building. Later, that became a generator of vertical densification of the city. After the 1960s, housing cooperatives emerged through the legalization process of fragmented ownership (Türel, 1986: 56-57). Actually, it was one of the drives for the concentrated *oil drop* growth pattern of the city, which is the common characteristic of undeveloped compactness. Hence, the urban development by middle-class housing cooperatives were choosing their location in the fringe of the city, such as Subayevleri, Or-An and Gazi district.

Figure 8.5: Urban districts, transformed/developed by Yucel Uybadin Plan and District Height Regulation Plans, between 1957-75 (Source: Personal archive)

On the other hand, one reason of the high-density level was unrealization of proposed settlement areas, such as Keçiören, Dikmen and Balgat, and meeting future development by intensification of existing built-up areas (Kaya, 2002: 86). Since, the plan schema kept urban development strictly within plan boundaries, increasing land prices encouraged illegal and relatively free construction in vicinity of planned development areas (Bademli, 1986: 107). That is the factor, which produces 'oil drop' urban form with both densifications inside and through expansion to outside. In this sense, Demetevler, in northwest of Ankara can be regarded as illegal development with high-rise apartment blocks, occurred in the process.

Another tool for densification was widening existing roads and creating new arteries. This was not only a technical solution to transportation problems but also a tool for increasing the rent of land, which produced a demand for increasing the heights of buildings through the arteries. It was one of the critical issues, which Jansen had warned about. Therefore, Yenişehir, previously developed based on Garden City principles, transformed into a high-density high-rise fabric. Yet, the plan did not consider the formal transformation with functional one. As if there was nothing changed in space, they thought Ulus, the historical city center, would not change and keep its CBD function (Levent et al. 2002: 17).

The process of vertical expansion, because of limited land for horizontal development and high land prices, ended with lower service standards like loss of green areas, inadequate social/technical infrastructure and poor quality spatial conditions. Within the urban fabric produced, urban standards of green space, education, health and culture were provided at overall average rate of 10.8% in the beginning of the 1970s (AMANPB, 1973). The most significant real result of the intensification process was air pollution. In measures, a high correlation was determined between urban density and pollution level. Here, 350 p/ha was the critical level for pollution as gross population density –net 450 p/ha- (Çakan et al., 1977: 47).

With respect to space production, the plan is an extension of the idea of rectangular building island. It is inherited from the urban pattern proposed by Jansen Plan. The important point here is the problem emerges from that type of layout, which is suitable for the settlement types of low-density low-rise urbanization but mainly problem for any transformation through high-rise construction. By the physical transformation of 'tear down-build and sell' process, new urban fabric were made of high-rise apartment blocks, which have 6-9 stories with a distance of 2-3 meters to the adjacent ones.

While buildings were demolished before their lifetime ended and replaced by high-rise apartments, the urban image, produced by Jansen was completely turned up side down in settled areas, negatively. The main reason of the under-standard urban pattern is the process of spatial transformation. The urban texture suggested by Yücel-Uybadin inherits the layout of Jansen Plan. It was shaped on rectangular building blocks, appropriate for low-rise detached housing. When urban transformation based on high-rise housing with increased construction depths applied on the same ground, spatial

quality was lost with regards to solid-void space ratios within close, crowded and impractical urban layout. (Kaya, 2002: 88) Furthermore, it created immense density pressures. With a coarse calculation, when single houses in garden spaces had turned into 7-storey apartments in the same lot with greater depth, the density measure within one hectare increased from 240 p/ha to 2016 p/ha even though the average size of households was assumed to decrease from 5 to 4 (Bilsel, 1977, 55).

8.1.3 Ankara 1990 Plan (1975)

In the 1970s, while Yücel-Uybadin Plan envisioned a population of 750,000 for the city, the Height Regulation plans raised the development rights for up to 2 million people. On the other hand, because of the high land prices within the planned inner city, almost 60% of the population -low-middle income, which cannot afford development costs- were excluded and compelled to locate adjacent unplanned areas of inner city (Altaban et al., 1980: 146). Such a development pattern can be taken as a model-example to 'undeveloped, illegal, unplanned urban compaction'. As new unauthorized developments did not occur in low-density areas but in medium to high-density areas, they were not developed separately from the existing city, but closely adjacent to it. Actually, this was the case, which Ankara Metropolitan Area Master Plan Bureau (AMAMPB) had to deal with.

After the 1970s, the system of 'build-sell' was transformed into 'tear-down-build-sell'. On the other hand, the dominant trend for vertical inner city densification has reduced due to the emerging process of the hesitantly extension/sprawl of the city. This was fed by increasing ownership of private vehicle and rising consciousness of public opinion, as political pressure, on the close relation between excessive development rights in the inner city and the phenomenon of air pollution (Tekeli et al., 1986: 150). The first example of emerging leaping development was OR-AN mass housing. Moreover, location choice of pubic institutions had been directed to peripheral axes towards outer existing urban areas from the 1970s (Altaban, 1986a: 137-38).

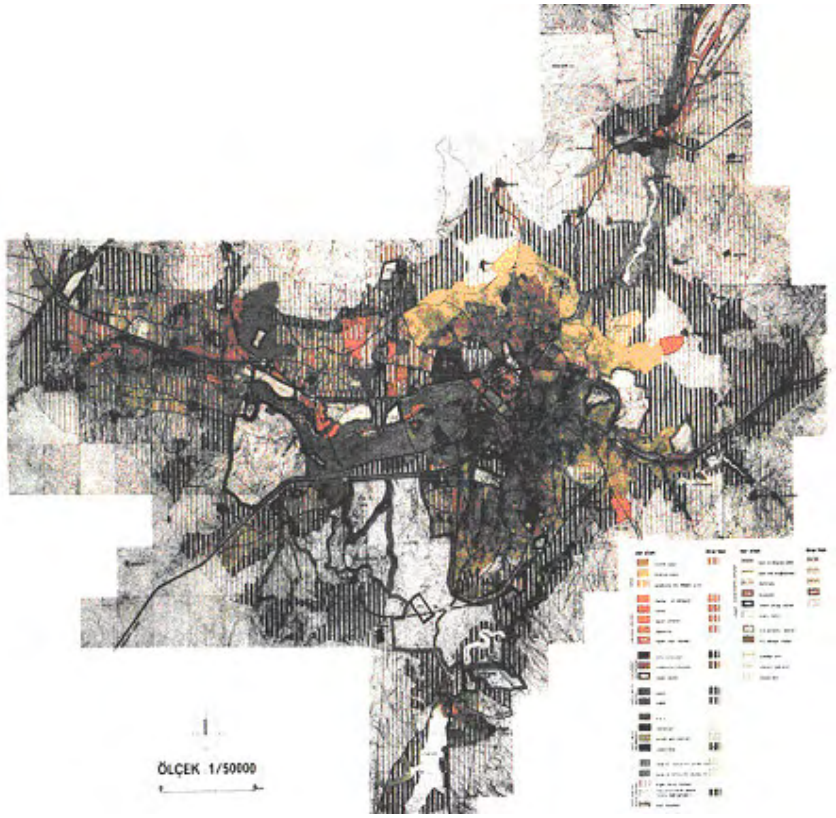


Figure 8.6: Structural schema of urban form by Ankara 1990 Plan.

A need for a new plan emerged from urban conditions, fed by previous planning experiences and those conditions became the reason for the foundation of AMAMPB as a department of the Ministry of Development and Housing. The importance of the bureau for the urbanization of Ankara directs from the original planning approach of the team to the planning process of the city. Different from the previous ones, the planners aimed to direct and canalize future development within a determined pattern. They realized it by means of a framework/principles plan schema at 1/50.000 scale. This is not a final physical form of the city, but the structure of it. It was shaped by related sectoral project packets, such as mass housing, industry, institutional-regional development projects. (Bademli, 1986: 109).

Prepared between 1970-75, major objectives of the plan, which were directly referring to the proposal of the city structure and urban form, stated in the 1977 report are,

- To achieve an economic physical structure, minimizing investment and management costs.
- To minimize environmental pollution.

- To enrich the urban-nature relationship, to ease the accessibility to rural areas, to protect natural and cultural heritage, and to increase the percentage of green and open areas.

The features of projected urban form to give a way to plan objectives were,

- Using the existing technical and transportation infrastructure most efficiently.
- Giving a priority to urban mass transportation and giving equal importance to private auto-usage and public transportation.
- Forming maximum intersected and meeting surfaces with natural and urban areas.
- Being implemental by giving priority to feasible projects.
- Guiding the physical development process without ignoring real development trends. (AMANPB, 1977: 234)

For the first time, a master plan of Ankara aimed the integration of land-use and transportation, which is still a must for sustainable urban development strategies. Such a view was methodologically supported by a comprehensive outlook and alternative solution-production. Alternative plan diagrams and the criteria of elimination of them also represent the ideological positioning of the planning team-Ankara 1990. Here, the main criteria are defined based on integration vs. decomposition and the problematic of centralization as the parameters of *inner-structure*, density and geometrical plan form as the parameter of *form*. (AMANPB, 1977: 43)

Integration and decomposition basically mean different conditions of urban functions within the antagonism of 'maximum integration' and 'maximum separation'. (AMANPB, 1977: 101-102) The first meaning is diffusing separate uses into the districts in mixed-use pattern, whereas the second one means polarizing separate use with a segregational manner into certain districts.

By the determinacy of criteria planning team produces eleven different plan scenarios and schemas:

1. Corridor
2. Oil-drop
3. Dispersed oil-drop.
4. Existing trend of oil-drop
5. Satellite.
6. Linear
7. Existing trend of dispersed.

Chiefly, they were constituted on three basic dimensions:

- Intensification vs. dispersal of housing
- Multi-centrality vs. mono-centrality

- Sub-district based integration vs. separation. (AMANPB, 1977: 102-106)

After an elimination process, three different alternative schemas have been prepared (see: Figure 8.7):

1. Trend schema
2. Satellite schema.
3. Corridor schema.

Figure 8.7: Major urban form alternatives of Ankara 1990 Plan: Trend (1), Satellite (2), Corridor (3) (Source: AMANPB, 1977: 231, 256, 259)

Trend schema represents the development condition without any plan control mechanism. In that scenario, they envisage low-density dispersed housing pattern by means of high rate of private auto-usage and emergence of huge separate shopping centers through the outer axes. It is clear that such a scenario is relatively consistent with today's urban conditions of Ankara. By satellite schema, it is visualized that existing urban settlements within the radius of 100 km. would turn into growth poles. In the scenario, low-density housing and multi-centrality are the principle conditions. While further development of the existing city is prohibited in the fringe, new separate nodes, with auto-based mobility patterns, ensured the dependency to the central city. Finally, in the last alternative, Corridor Schema, the transformation of existing transportation axes turns into high-density development corridors. The main characteristic of the schema is being relatively more 'compact' formally and being counter-compact functionally. While there are high-density housing through transport lines, a separation of urban functions to specialized sub-urban regions were envisaged. (AMANPB, 1977: 108, 227-230, and 253-258)

From the alternatives, the bureau chose the third alternative, corridor schema as final plan schema of Ankara 1990 Plan. Besides, meeting the requirements of plan objectives, mentioned before, corridor schema was accepted as the best alternative to solve air-pollution problem fundamentally. (Alatan, 1977). Additionally, inflexibility of urban form, proposed by previous plan schema was surmounted by new development schema of Ankara 1990 Plan. In order to obtain the stated physical structure and forming a new urban system, which is open to further development alternatives in control as well, urban development corridors were proposed. Those corridors -through north-west and south-west-

were taken as a tool for decentralizing the urban functions within the distance of 25-30 km. By means of 12 different development zones on the corridors 48% of the projected population was aimed to be located in decentralized development districts by the plan (AMANPB, 1977, 350-51).

Density measure of the plan was determined by ranging. 140, 200 and 250 p/ha were stated as low, medium and high-density levels. While existing average urban density of the city was 140 p/ha in time, the plan proposal was made on 200 p/ha as gross density level. (Ibid: 20) Hence, they stand at the position of stabilizing the existing density level in inner city and keeping overall density level -170-250 p/ha- constant by offering 170 p/ha for new developments (AMANPB, 1977: 355-366). The approach of the bureau to the problematic of urban density is very progressist and can be considered as contemporary in today's ideological achievement of sustainability literature. It is clearly stated that, "*High average densities are advantageous with respect to economies of urban space, reuse of existing infrastructure, decreased travel time and distances and public transportation. In that sense, Detrimental results of existing high urban density level should not be blamed for being the reason of service, transport and infrastructure insufficiency and air-pollution, itself. Rather, they are just the results of the realization of urban density based on porousless and tight urban fabric by improper planning"* (AMANPB, 1977: 96).

'Compact' typed design forms in urban district and architectural level complement structural suggestion of dense linear development pattern. It is presented as the best solution for the transport nodes. (Ibid: 78)

With respect to the realization of the plan, implementation process in squatter prevention zones (Sincan), new housing developments (Batıkent, Eryaman) and Ankara Organized Industrial Zone can be regarded as the success of the Ankara 1990 Plan by enabling land stocks of public for further developments (Bademli, 1986: 110). Thus, its vision is still the determinant factor of existing urban form of Ankara.

Figure 8.8: Housing areas, developed by the initiatives of Ankara 1990 Plan. –Typical housing layouts in Batıkent and Eryaman- (Source: Personal archive)

It is important that, all the mass housing estates, produced by the initiative of Ankara 1990 Plan do not represent a modernist conception of centrism, even being in high-rise and high-density formation. Some mass-housing examples, produced by cooperatives, are the result of the preferences of high-rise for high-densities itself; rather creating more open spaces in a modernist mode of space production (Günay, 1999a: 53). In this sense, strictly confirmed high-density urban pattern in the inner city reproduced itself in urban fringe in the form of additional extensions. That created a duality in fringe areas of Ankara: Low-rise medium to high-density urban pattern of squatter areas and high-density high-rise urban pattern of mass houses.

Besides, the ideological stance of the planning team, AMAMPB, is relatively in favor of the urbanist point of view by their overall preferences on urban form and city structure. It should be appreciated that in spite of negative externalities of undeveloped compactness, which was densely lived in the city of Ankara in time, they did not principally exhibit a reactive positioning to urban compactness. They did not only try to control prevailing urban densification in existing city, but also to curb urban sprawl, possibly being dominant in future. Actually, this would become one of the major factors for integration of present public transportation system to the existing urban fabric, in the beginning of the 1990s.

8.1.4 Ankara 2015 Structure Plan (1986)

Because of a series of partial development-reclamation plans in the beginning of the 1980s, the proposed balance between population and density through the urban fabric was significantly damaged. Additionally, by the Laws of Exemption of Squatters, unauthorized development was legitimized and the opportunities for controlled development were lost. In this condition, the study group by the Middle East Technical University was charged to prepare an urban macro-form analysis and plan to a base map for the investment of public transportation (Altaban, 1998: 63).

The population estimation of the plan for 2015 was 5 million for that year. The plan, prepared by the group, should be considered as a policy plan or structure plan but not master plan. Its structure covers a wider metropolitan area than Ankara 1990. So the plan schema and analysis include Elmadağ, Kazan, Çubuk, Akyurt, Temelli and Ahiboz within a region of 70-80 km in depth in additions to Kırıkkale, Polatlı were considered as self-sufficient settlements, not necessarily integrated into the urban system proposed (METU Study Group, 1986: 184).

The key strategy of the plan was decentralization. From that side, it is categorically positioned against urban compactness. In that strategy, beside existing urban fabric of Ankara, each of those settlements, listed above, were taken as growth nodes in overall urban system, envisioned.

Decentralization, here, was not a normative positioning of the study group but a real trend being experienced in time. This trend is claimed to be supported by certain urban phenomena:

- Current tendency of public institutions, requiring huge campuses and choosing new locations in the periphery.
- Tendency of large and small-scale industry in Ankara to locate away from the center in the formation of organized industry.
- Loosing its former influence of the petty-capital production of housing within inner city and empowering housing production by housing cooperatives in urban fringe.
- Rapid increasing of private automobile usage.
- More effective and common use of service bus system of institutions (METU Study Group, 1986: 182-84).

The main policies of Ankara 2015, which are directly related with the formation of urban form are as follows:

- New residential zones should be leaped out from the topographical threshold, which surrounds existing urban fabric, suffering from air-pollution.
- The population of new growth nodes should not exceed 300.000.
- Decentralization process should be performed in a ring of 35-40 km by strengthening the existing settlements, rather than the development of new towns.
- The allocation of employment opportunities should be regarded as the main factor in the decentralization process. Residential and working areas are to be kept close in each decentralized center.
- Rather than a widespread decentralization based on private car ownership, decentralization, in the form of a star-shaped city structure based on public transportation, is suggested.
- The futured urban form would be flexible to give the opportunities to develop prosperous alternatives in the future.
- Generating greenbelt system by increasing the width of the existing one to 8-10 km in order to create a microclimatic effect of air-circulations (Ibid: 184).

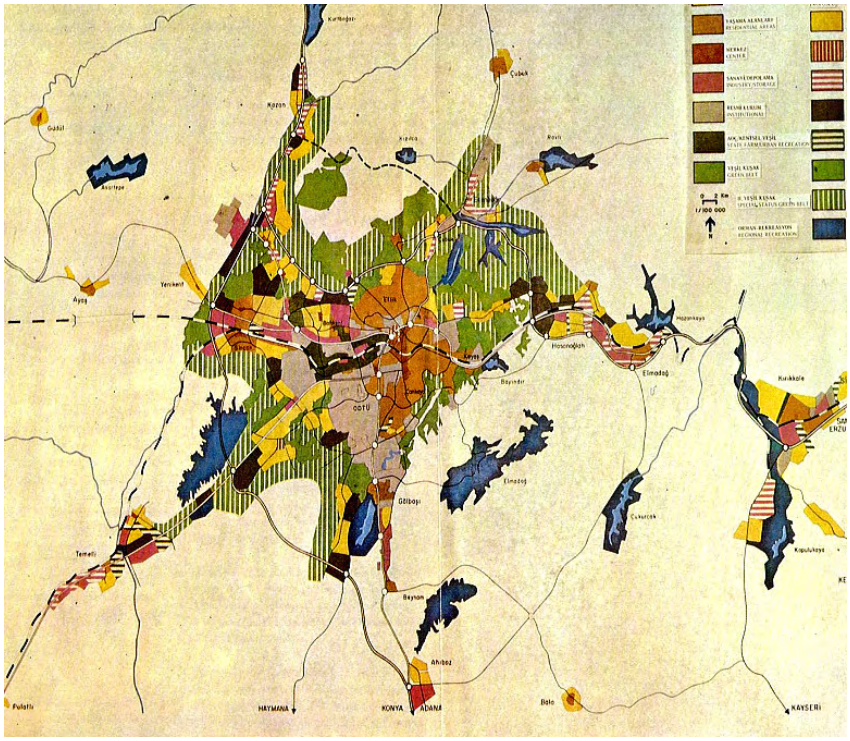


Figure 8.9: Urban macro-form schema of Ankara 2015.

Apart from the real conditions in favor of the decentralization in time, the group perspective on urban compactness was clearly negative, unlike that of Ankara Metropolitan Area Master Plan Bureau. They regard compact urban form of Ankara, by defining as 'high-density oil-drop form' as the producer of negative externalities, such as air-pollution, infeasible transport and infrastructure provision and sub-standard urban spaces. Thus, it was claimed that after 30 years with projected population of 5 millions, keeping the city in compact macro-form would have resulted in 'the death of the city' (METU Study Group, 1986: 182; Günay, 1992a: 44).

Although, only 33% of proposed planned housing development was realized within 1970-85, it could be ascertained that active planning approach of Ankara Metropolitan Area Master Plan Bureau -AMAMPB- became successful to shape urban form by a certain development policy (Altaban, 1998: 60-61). After the legislative regulations on the responsibility and authority of municipalities, plan producing and implementation processes became more partial than before. This became the major reason why urban forms of Turkish cities cannot be shaped and controlled by a holistic framework. Actually, it was because of that overall development scenario, proposed by Ankara 2015 Plan was not possessed by any authority for implementation like in previous case. The ministry did not approve Ankara 2015 Plan. Yet, the governor office, the municipality and the ministry signed a protocol on the plan document, which would not have bound future developments in Ankara. Indeed, it is the fact that brought about the real conditions of the following master plan schema, Ankara 2025.

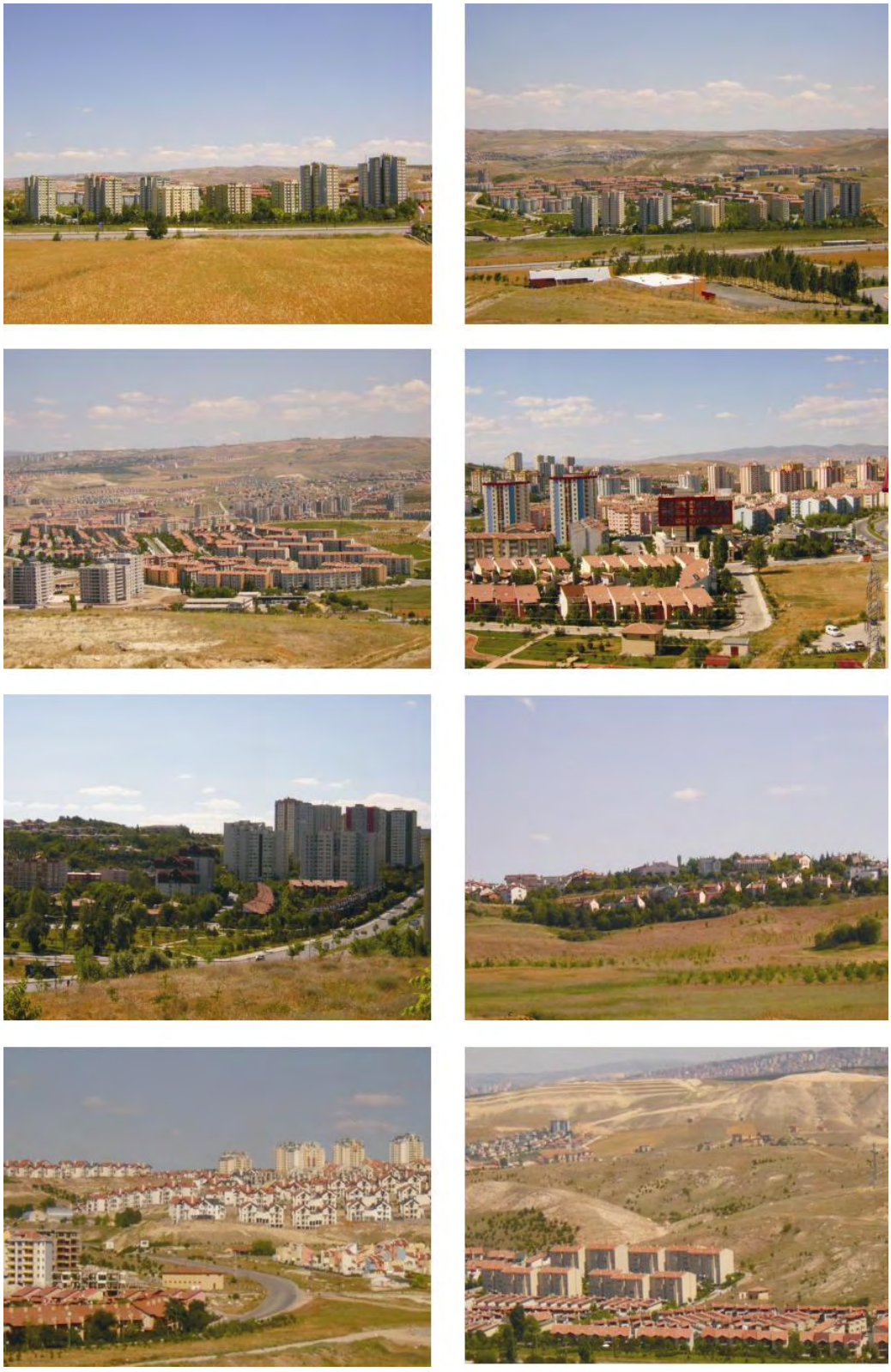


Figure 8.10: South-western development corridor proposed by Ankara 2015 Structure Plan and early housing areas in Çayyolu district. (Source: Personal archive)

8.1.5 Ankara 2025 Plan Schema (1997)

After the study of Ankara 2015 Structure Plan, the problematic of municipal boundaries came into the agenda, in order to implement a planned metropolitan development. Within an ambiguity about whether 'contiguous regions' around existing municipal boundaries would be expanded or not, the first extensive partial plan was prepared by the Ministry of Development and Settlement and was approved by governor's office in 1995. It was the first development attempt free from Ankara 2015 plan schema. Instead it was prepared with reference to Ankara İli ve Metropoliten Alan Gelişme Şeması-The Development Schema of Ankara Province and Metropolitan Area by the ministry. In the first half of the 1990s, private entrepreneurs became influential pressure groups, demanding profitable opportunities for development in the periphery of the city. That was the dynamic that increased the transformation of vacant land in the fringe into housing areas. Disturbing the balance among population, workforce and infrastructure, new tendencies made compulsory to prepare a new master plan as a holistic framework for future development. Then the plan proposal, Ankara 2025 Master Plan was made by the planning office of the municipality in 1997 (Gökçe, B., 2003: 18-19).

Although not being an officially approved document, Ankara 2025 Plan as fifth master plan schema of Ankara is worthy to be evaluated in our framework. The main plan principles of Ankara 2025, which are related with urban form are as fallows:

- Population projection of 7,200,000 for the whole metropolitan area of Ankara in the year 2025.
- To avoid attending any new planned population to existing inner city, produced by Yücel-Uybadin Plan and keeping the population and densities of the areas constant within the areas formed by the plan. Rehabilitation of unbalanced population distribution by decentralization of congested/cramped functions in existing urban fabric to newly created nodes, corridors, axes and attraction centers.
- Acceptance of the population increase from 768,490 in 1990 to 1,389,433 by 2025 in the areas where partial reclamation plans have been approved.
- Support of the regeneration and transformation projects within inner city.
- Preventing further growth of industrial areas in existing crocks of development and decentralize them to peripheral areas of the city.
- Searching for the possibilities of the decentralization of military areas in the boundary of existing fabric, by their functions.
- Providing gaps as breathing spaces in a citywide open-space system within dense urban districts.
- Encouraging high-qualified sub-center developments in potentially developable growth poles and corridors.
- Developing housing estates in southeastern corridor of Eskişehir axis for high and high-midde income families.

- Directing public foundations requiring large area usage towards the node of Elmadağ through Samsun axis. (ABBB İmar Daire Başkanlığı, 1997).

As dominant growth policy, the peripheral expansion, envisioned by Ankara 2025, is not constructed on the binding conditions of neither functional nor physical thresholds in real. There is a dominant propensity that almost all developable locations in the outskirt of the metropolitan built-up area are left to urban development without any significant criteria. Those criteria should be related to existing urban fabric, such as optimum overall density or optimum distances from central city. Despite it is shaped by partial fulfillments of market demands without any noteworthy ranking in process.

On the other hand, the plan has a dilemma by both supporting peripheral development in extreme case and accepting immense population increases within inner city by the reclamation plans of district municipalities as well.

In addition, consideration on directioning urban form and shaping city structure cannot be traced in plan schema of Ankara 2025. Therefore, it is difficult to classify and define the urban form and structure, suggested by the plan. Its formlessness is an indicator of its low level of sensibility on the issue of the dependency degrees of new developments. Furthermore, it is difficult to rationalize the plan decisions of optimum size and densities of new development zones.

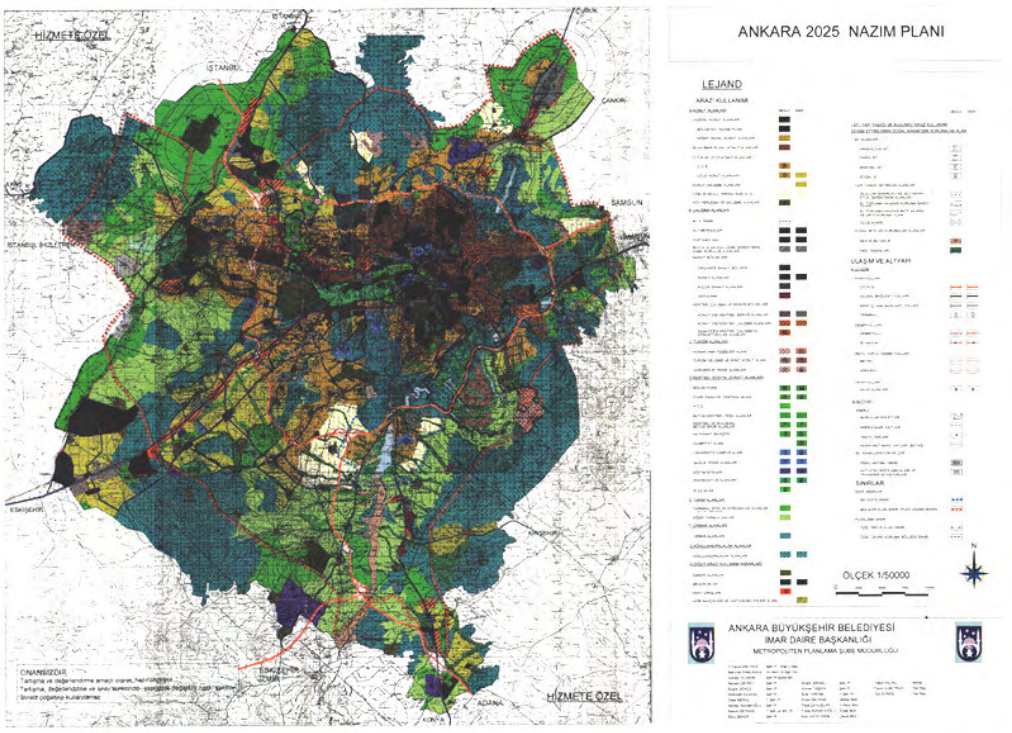


Figure 8.11: Ankara 2025 Master Plan Schema

As an amalgam of previous partial development plans for the new growths, the plan does not produce a serious urban transformation strategy for the existing urban fabric. Its overdrawn population projection in the present condition of vacant housing stock was subject to critiques from Turkish planning circle. Then the plan proposal stayed as it was because of the unapproval of the council of municipality.

Even though it was shelved and did not get a chance to be implemented, Ankara 2025 plan diagram represents an original image of certain planning process, which produces fragmented urban forms according to the dynamics of free-market mechanism. Thus, Ankara 2025 Master Plan and its envisioned urban structure can be regarded as a product of uncoordinated planning system, experienced within the last fifteen years in Turkey. This planning process, depending on disconnected actors, in planning and implementation stages, dictates institutional controversies rather coordination, decomposition rather than integration. The city structure emerged as final product of the institutional framework, can not become beyond 'whole of the parts'. Partial developments would not be creation of a controlled structure plan, but rather independent constituents of the macro urban form in the last stage. The urban form suggested by Ankara 2025 should be read and evaluated in this framework. The fragmented structuring of urban form is the response of partial market demands without any coordination. Therefore, they do not refer to the unity of the form, being shaped in progress. As a result, form of the city inevitably is shaped without basic requirement of urban compactness, which is spatial coherence/contiguity. Current counter-compact formation of the urban form of the city of Ankara should be evaluated in that perspective today.

After Ankara 2025, discontinuous development pattern was fed by further partial plan revisions, even at the scale of 1/50.000. In 2001 Ankara Nazım Planı Kısmi Revizyonu-Ankara Master Plan Partial Revision Plan was prepared with the co-operation of the municipality and the ministry. This approved plan disregards the elementary form of star shaped decentralization axes of Ankara 2015 -Eskişehir Road and İncek-Taşpınar Axis- by developing in the unbuilt area, which was previously an open air-circulation wedge between the corridors (Gökçe, 2002: 20). The plan area covering, three university campuses -METU, Bilkent and Hacattepe- and seven settled villages within an area of 17,700 ha (BİB, 2001: 5), turned southwestern *strip* of the urban form into a development *region.* While housing areas comprise 44.5% of the area (see: Figure 8.12) urban densities within the area are determined as 60 p/ha for medium-density and 30 p/ha for low-density settlements –half of total housing area proposed-. (BİB, 2001: 19-20). It can be evaluated as an attempt to decrease existing density level of Çayyolu district, as the plan objective.

Major dynamic of the plan is development demands of various housing cooperatives directed to the ministry. Hence, there were a number of housing areas, which had previously been started to be constructed in the plan area, by adding all approved partial development plans. Ankara Master Plan Partial Revision Plan includes 107 separate development plans, some of which are for the area of less than 2 hectares and the population of almost 40 people (BİB, 2001). Naturally, it is impossible to

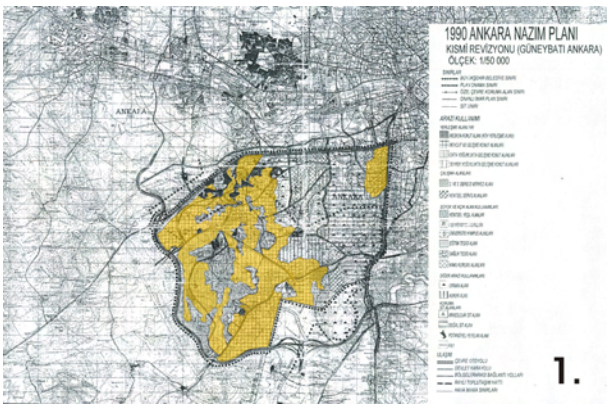
expect a compact and centralized development schema from such a planning process without a holistic development approach.

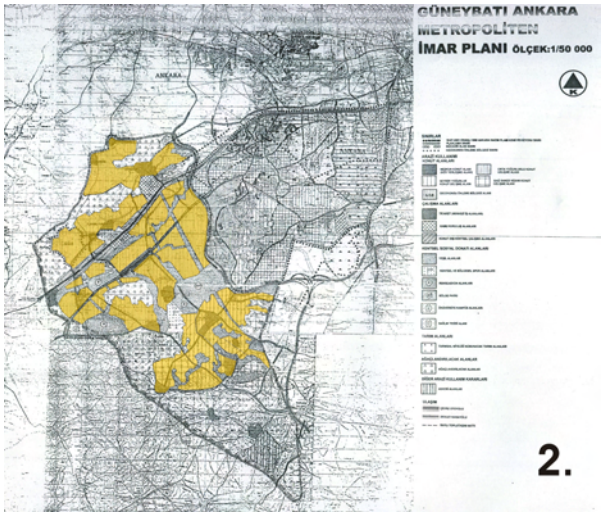
After three years, Güneybatı Ankara Metropoliten İmar Planı-Southwestern Ankara Metropolitan Development Plan was prepared with former co-operation of the municipality and ministry in February 2004. By the plan, basically the same approach is envisaged by the additional plan, with respect to space structure. Like the previous one, it also offers a fragmented space structure with the same level of densities and development codes (IIB, 2004). On the other hand, the plan put s an end to the mission of the freeway as a border of development through southwestern axis by offering the development to the further side of the way.

It is interesting that the reasoning of the plan is presented in the plan as "revealing the development pressure, concentrating in the topographical crack -inner city-." (IIB, 2004: 1), although such a target had already been achieved since mid-1980s.

It is important that, from only one respect, density, the urban image suggested by 2000s' planning teams and process is completely different than those of the 1970s. Comparing net urban densities between Eryaman housing district on western development corridor of Ankara 1990 Plan, which has an average density of 122 p/ha, and new housing developments by partial plans, in the south-western axis, more than half of the density measure -max 60 p/ha- is aimed, today.

Furthermore, the plan process, encouraged by the partial plans, the idea and rationale of corridoric development was put aside. Instead, star-shaped development pattern is being deformed by additional medium to low-density urban *sub-regions.* It can be regarded as a return to the conventional development process of Turkish city, which is named as 'oil-drop'. In other words, it is the realization of the *formlessness of urban form.*





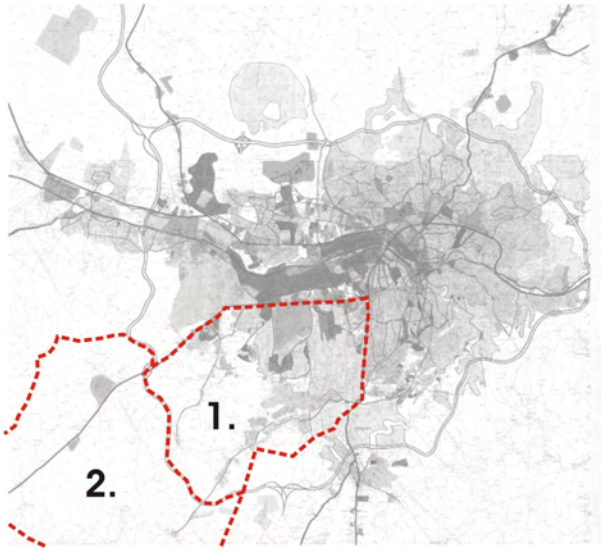
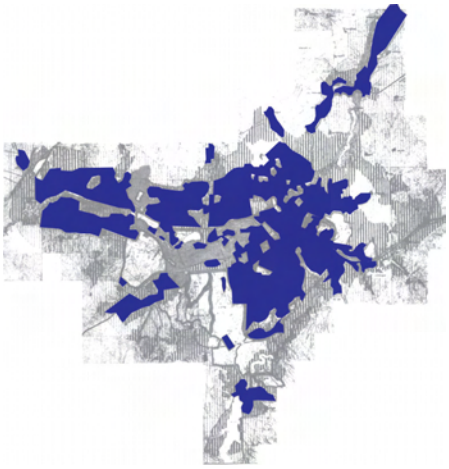


Figure 8.12: Settlement areas offered by Güneybatı Ankara Partial Revision of 1990 Ankara Master Plan-2001 (1) and Güneybatı Ankara Metropolitan Development Plan-2004 (2) above and the locations of the plan areas in whole the urban form, below.

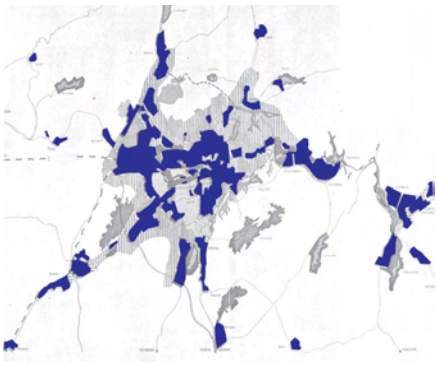
Figure 8.13: The last generation of housing developments as the productions of the urban approach of Ankara 2025: Vertical densification in inner squatter areas and low-rise low-density fragmented developments in peripheral areas –south-western areas and Gölbaşı districts- (Source: Personal archive)

(1) Jansen Plan (1932)

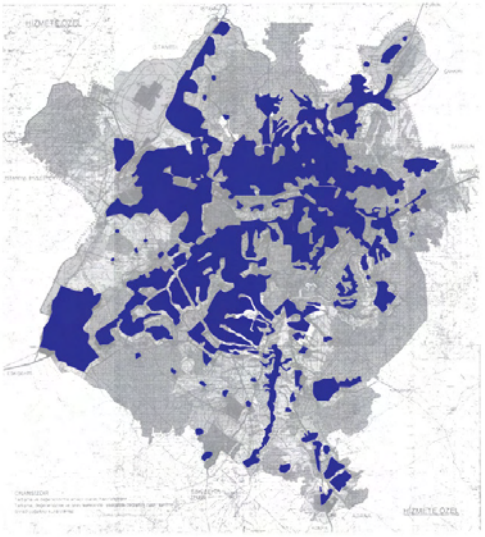
(2) Yücel-Uybadin Plan (1957)



(3) Ankara 1990 Plan (1975)



(4) Ankara 2015 Structure Plan (1986)



(5) Ankara 2025 Plan Schema (1997)

Figure 8.14: The diagrammatic schemas of the proposed built-up areas by the master plans of the city of Ankara.

The urban form proposed by Jansen Plan is relatively compact and inward looking in the two-dimensional schema. Such a compact form is constituted by the backbone of Atatürk Boulevard thorough the axis of Ulus-Yenişehir-Çankaya. New urban fabric, mainly developed in southern region of the city is closely located with historical urban core. This is basically the result of the planning ideology of the government as well as the technological level of urban mobility, which was not allowing a significant divergence from existing population settled in historical city in those years. As we quoted above, symbolic considerations of the republican team founders did not want to start from zero in space. Instead, they aimed a symbolical continuity by referring the principal historical entity, physically, while building a new one. Such a concern restrained the plan proposal and directed a close-knit planned urban schema. In Jansen Plan, the parts embody clearly packed urban form. Urban clusters as the parts, which are separated by green wedges, are closely cohesive with each other in urban-regional context. This kind of a compactness -boundary based- in the 2nd dimensional-plan diagram does not give any clue for a possible future direction of further growth. It is just a final product of ultimate urban development, without any flexible manner. A readable plan boundary results from natural thresholds, valley bases, sloped ridges and drainage levels. Schematically, city structure directly refers to mono-centric development pattern. In this sense, it represents a well-balanced urban layout.

The antagonism between culturalism and progressism, which is stressed by Günay (Günay, 1992a) in production of urban space, brought out in favor of culturalist point of view in the context of urban form, in Yücel-Uybadin Plan. Culturalist approach of the planners results in a fear of a further development separately from existing urban entity. Such a perspective produces an enclosed urban macro-form, which has not an open system and flexible structure for alternative development patterns. Here, the feature of the compactness of the city form is an obstacle for re-production of urban form in macro-level. On the other hand, such compactness is tried to be refined by constituting green wedges penetrating through inner areas in the plan. Basically, those are natural drainage and air circulation channels to be preserved. Since they were not properly identified by planners and controlled by government, we observe that those fragmentations in the compactness were lost and inner city urban form became a more consolidated ‘mass’ in process.

After the physical transformation imposed by Ankara 1990 Plan, first of all, we observe a radical directional shift in the city structure. While the city is formed through north-south axis in the previous plan schema, urban growth is positioned on the east-west direction. Yet, it is not only a simple directional modification, but also a fundamental transformation of city structure and urban form. While in the previous schema, urban fabric was compelled to reproduce itself within geographical margins in compact manner, the city obtained a chance to be free from confined/compressed development pattern. Directing urban development to the east-west corridors guaranteed an open system for an outgrowth. On the other hand, solely from the diagram of Ankara 1990 Plan, it can be inferred that the plan does not prefer a spread –out and scattered development pattern. Instead, each

new extension is defined linearly within a readable boundary and a pre-determined perimeter. With the combinations of axial strips, the city form resembles quasi-linear or quasi-star shaped structures. Besides, being free from a bounded urban form of Yücel-Uybadin Plan, Ankara 1990 plan schema does not present a flexible development pattern, indeed. Thus, all extensions of the 'star' do not have equal power to meet future growth. Actually, the plan layout represents a mono-directional and unbalanced character with the dominancy of western corridor, as noticed from the diagram. Comparing previous schema, the surface relation of new urban fabric, proposed by Ankara 1990 Plan, with unbuilt surrounding areas is much more than others. It can be regarded as an asset for an intensified urban fabric, formerly deprived from decreasing rates of green spaces per individual.

Despite Ankara 2015 is not a master plan but a policy plan, it figures out a structural diagram, which can be subject to an evaluation on physical form. One of the main differences of the plan proposal of Ankara 2015 on city form is its structural formation. With the diagram, previous mono-directional schemas are turned into a non-directional figure. With proposed quasi-star shaped urban macro-form, a multitudeness in corridoric development pattern has been created. Among the separate growth nodes on different axes, western corridor is the most dominant and bulk one today. It is due to the macro-pattern, inherited from Ankara 1990 Plan Schema. Separate decentralization nodes cannot form readable spines and do not support the design scenario of urban macro-form based on star shape. While, built-up areas penetrate into peripheries the permanence of the urban form is lost. Naturally, it is a direct result of the flexibility objective of the planning team Ankara 2015. This is the case which previous unity of city form loses its affect in spite of the green-belt system trying to surround whole proposed urban system. On the other hand, for the sake of flexibility, legibility of urban structure is sacrificed into the decentralised schema, without a continuous border definition of built-up solids. With a highly elusive form of city, green belt would not be an effective tool for controlling development through the corridors, which results further deformations in previously compact urban form. Additionally, the plan schema of Ankara 2015 provides a system open to further conurbations rather than extensions with decomposed urban structure at metropolitan level.

Instead of offering a polycentric structure, which categorically represents an efficient solution for expanding metropolitan forms, the development pattern of Ankara 2025 suggests a non-centric formation. This condition confines the possibilities of any integration of public transportation system into the urban fabric. Moreover, there is not any continuity observed in the diagram. This is because of the fact that the plan does not have a consideration for designating a persistent urban fabric by joined urban districts, such as linear development corridors and nodal growth poles. This is one of the different side of Ankara 2025 Plan from two previous plan figures, 1990 and 2015. By boundary definition, the plan layout also fails. Even though perception of the structure of a metropolitan area is very difficult for human sense, plan conception of Ankara 2025 completely annihilate it, even if any existed in previous forms. The conception of parts-whole relationship is radically disregarded by the plan. While development areas diffuse into surrounding countryside, the notion of center and limits are totally lost. Without a recognizable system of centers, the plan is far from an intention to create a

new form of centrality even in polycentric form. Beside functional efficiency of urban fabric and effective perception of individual, such a fragmented and scattered urban development pattern also make the relationship between urban and rural uncertain. In that context, unbuilt vacant lands surrounding the urban region become subject to undetermined urbanization. Actually, this is the condition of temporality as a disturbance factor of urbanity. Unlike the plan schema Ankara 2015, the urban system of Ankara 2025 does not tend to offer a structure, which can be available for any future conurbations. Instead, it visualizes a distinctive dispersion by thinly spread urbanization pattern.

After the physical evaluation of urban macro-forms of plan schemas above, as an overall evaluation of the ideological stances of the master plans of Ankara, with respect to the problematic of urban compactness, it can be claimed that each planning experience could position itself into separate phases of urban pendulum in-between centrality and decentrality. The main concern of Jansen Plan was creating a city, apart from a semi-rural Anatolian town. Therefore it was inevitable centralist in macro level. On the other hand, its envisaged urban image was rather a production of decentrist node of thinking. Therefore, it should be considered in compromiser position.

Although Yücel-Uybadin Plan shares the same planning and design outlook with Jansen Plan, further speculative pressures make bounded urban fabric a dense, intensified and homogenously high-rise city, the planning experience of Yücel-Uybadin with subsequent plan revisions can be positioned in the centrist position. Yet, its originality of Turkish case is that such a centrism does not coincide with urbanist point of view producing 'anti-urban' mode of spaces: high-density without compactness.

With Ankara 1990 Plan, AMAMPB aims both to curb future densification of inner city and to keep overall density level stable for the economy of development. In addition, they desire both to leap the present urban fabric out of topographical thresholds by urban extensions and to keep new developments close to the existing one in a quasi-framed form for an efficient relationship with public transport. In that respect Ankara 1990 Plan finds itself in the same location of urban pendulum -a compromiser position- like Jansen Plan, however they have different set of concerns.

At this point in time, the planning approach of Ankara 2015 can be taken as a breaking point in Ankara's planning experience. Hence, decentralist approach was the first time spelled out and put into practice on a plan document, even it would not be accepted officially. By suggesting a decentralized and linearly scattered urban structure in a star shape within wider context, the plan represents a counter-argumentation against former centralist schemas within different degrees. On the other hand, by envisaging a poly-centric urban system and not referring to a typology of decentrist urban pattern, like low-density, low-rise, Ankara 2015 can not be classified within decentrist/disurbanist point of view in a clear-cut consideration, in terms of our conceptualizations of planning/design ideologies made before.

At the position, which the planning practice of Ankara has achieved, it can be argued that prevailing planning ideology clearly represents an anti-urbanist viewpoint. Ankara 2025 plan schema is the reflection of the sound of such ideology, which is prominently shaped by free-market preferences. Because of its market-base partial production process and dissolved urban structure as a physical entity itself, the plan does not comprise any centrist motive, methodologically and physically. By promoting the move away from existing central city, it encourages segregated communities, instead of integrated 'urban' system within a certain degree of compactness. In addition, such an anti-compactionist view is fed by massive auto-dependency with increasing travel distances in a dispersed physical urban being.

Table 8.2: Physical, structural,spatial, political and contextual components/characteristics of the master plans of Ankara.

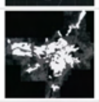
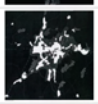
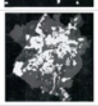
PLANS	Stage of the Urbanisation Process	Plan Schema	Projection Year	Population	Projected Population	Plan Area	Average Depth (r) of the Plan	SPATIALITY		City Structure	Urban Form	Main Policy Direction of Urban Development	Main Development Strategy	Major Consideration	Primary Transportation Mode	Average (Gross) Urban Density	Dominant Settlement Form
								Intensive	Extensive								
Jansen **Plan (1932)**	Rapid urbanisation		1978	71,500	300,000	2100 ha.	3-3.5 km.			Quasi-Core City	• Consolidated • Well-defined bounded • Organic • Mono-centric • Permanent • Inward looking	Horizontal Development Within the Plan Boundary	Development and infills within designated urban lands by housing cooperatives.	• To create an urban environment by the development on vacant land. • Ensuring hygienic and aesthetic new urban condition.	• Small busses • Suburban train	143 p/ha	• Low-density low-rise housing (detached villas in garden environment) • Medium density-low rise housing (maximum 3-storey attached labor houses in small lots) 
Yucel-Uybadin **Plan (1957)**	High population increase by migration		1977	455,000	750,000	11.000 ha.	15 km.			Extensive Core City	• Intesive • Centralized • Close-knit • Mono-directional • Confined • Continuous	• Vertical Compaction • Intensification in inner city	Meeting housing demand by increasing densities in the existing settled area with additional development rigths	• Maintaining the coordination between existing settlements and infrastructure investments as an addition to previous plan.	• Municipal bus system • Private system of 'shared taxi' • Troleybus • 'Dolmuş' (minibus)	189 p/ha	• High-density, high to medium-rise coarse housing settlement pattern. • Apartment buildings at individual parcels. 
Ankara 1990 **Master Plan (1975)**	Decreasing rate of urbanization after 1975		1990	1.7 Million	2.8-3.6 Million	14.000 ha	25-30 km.			Corridor/Quasi Linear	• Linearly extended • Unbalanced layout • Inflexible (axis dominancy) • Increased surface relation with the surrounding	Corridoric extension	Expropriation of large lands by local authority, then the development by mass housing cooperatives.	• Minimizing land-use, transportation and infrastructure costs. • Preservation of land resources. • Balancing private and public transport system.	• Fleet of minibuses, • Electrified suburban train • Transit Vehicle Fleet • Public Service Busses	200 p/ha	• Medium to high-density housing with garden space encouraging open system development. 
Ankara 2015 **Structure Plan (1986)**	Increasing tendency for escape from inner city (Sub-urbanization)		2015	2.2 Million	5 Million	42.000 ha	35-40 km.			Star-shaped	• Decentralized • Flexible • Penetrations in to periphery	Concentrated decentralization' through main transport corridors	Directing private housing sector and public intitutions by plan initiatives without any expropriation.	• To enable existing development in a topographical crock leap to the outside of the tresholds. • Solving air-pollution problem of highly dense urban fabric.	• Private automobile • Ligth Rail System • Metro • Municipal Fleet of Bus • Privately Owned Public Buses	130 p/ha	• Medium to low density development in realizatin. • Not exactly encoded by the plan. 
Ankara 2025 **Plan Schema (1997)**	Speculative and partial urbanization demands.		2025	3.1 Million	7.2 Million	150.000 ha	60 km.			Dispersed	• Scattered • Fragmented • Diffused • Multi-nucleated • Ad hoc • Non-centric • Elusive	Dispersion	Answering partial development requests of private sector in an uncoordinated way.	•Preventing additional increase in the population of inner city. • Directing further urban growth to new seperated develoment poles.	• Automobile (dominantly) • 'Dolmuş' • Bus System (municipal and private) • Rail System	50 p/ha	• Partially extensive • Heterogenous in density and rise without any whole system of an urban pattern. 

Table 8.2: Physical, structural and contextual components/characteristics of the master plans of Ankara.

8.2 Compactness Degree of Ankara Urban Form: Within Historical Context and In Comparison With World Cities

Beyond the urban policies followed, the prominent factor of the compactness of the urban form of Ankara has been its geographical conditions for years. Historically, the city was situated in the topographical crock, formed by the mountains, which are 850 to 1200 meters in height. (Altaban, 1986b: 7). Those ridges encircle settled area of Ankara from the north, south and east in horseshoe-shape. Actually, they act as a blockage to the development of urban fabric, and designate the growth limits of the city in three dimensions.

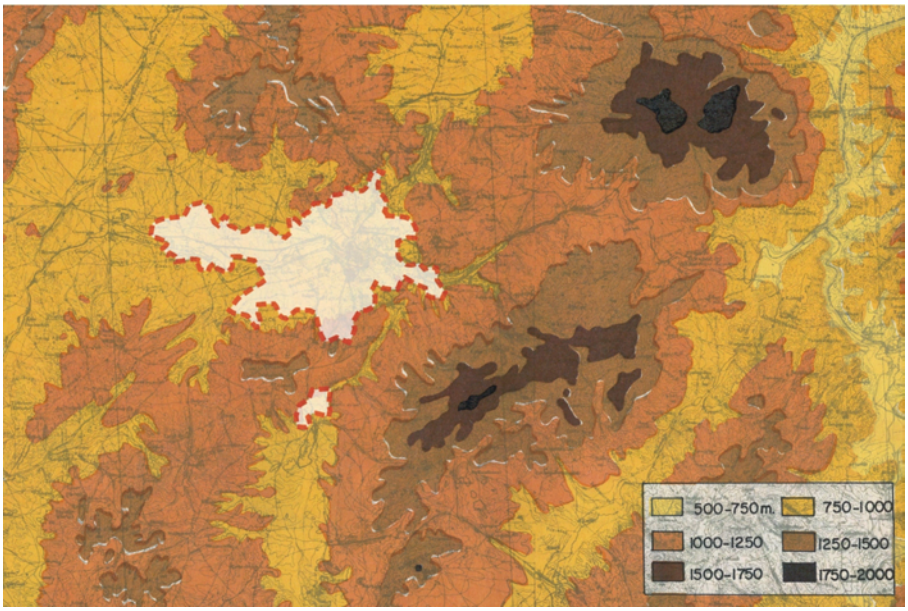


Figure 8.15: Surrounding topographical thresholds around the city and positioning of the urban form-Ankara 2000 (Adapted from: AMANPB, 1977: 139)

Another reason why the city of Ankara has not expanded widely through surrounding geography is unavailability of any development nucleuses, which would have been attraction points for further growths around the city. Also, there were not any intensive rural settlement patterns, which could have directed urban development by integrating to the existing fabric. Instead, they were growing by themselves and then coalesced with growing urban body. Moreover, insufficiency of the provision of infrastructure, limited public transportation system and minority of private vehicle ownership (Akçura, 1971: 70-72). have been the prominent determinant factors for the city keeping its compactness at a certain degree for years.

Within the physical conditions, stemming from the geographical formations, urban form of Ankara has being lost its flexibility to develop in alternative patterns, except the axial growth through the

western corridor. That is the reason why, the debates on the 'city structure' stays immature in the context of Ankara, not those on urban form.

When we look into the transformation of urban form and city structure within a periodisation, we perceive the fact that the evolution of physical entity of the city characterizes itself within certain phases. Separate combinations of the related factors of urban compactness feature each period of development: Area coverage and population measures.

Table 8.3: Historical transformation of the density measure of Ankara urban form in relation with area coverage and population increases.

	Urban Area (hectares)	**Population**	**Increase rate of area (%)**	**Increase rate of population (%)**	**Gross Density (people per hectare)**
1927	300	74,553	-	-	248
1932	710	110,000	136	47.5	154
1945	1,900	220,000	167	100	115
1956	3,650	455,000	92.1	106.8	124
1970	14,000	1,236,152	283.5	171.6	88
1985	27,000	2,304,166	92.8	86.3	85
1990	56,000	2,584,594	107.4	12.1	46
1997	62,000	2,949,771	10,7	14.1	47
2000	66,000	3,237,679	6.4	9.7	49

As seen in the Table 9.2, Ankara's population is 74,533 and the population density is 248 per/ha in 1927. This is the highest point of the gross density of the city. It was due to limited development of historical city within fortifications and its surrounding. After five years, the city reaches a population of 110,000, dispersed about 710 hectares, with an average density of 154 p/ha. Decrease in urban density directs from the realization of Jansen plan by developing low density, low-rise housing districts. In 1945, the city population reaches 220,000 and spreads over 1900 ha with a density 154 p/ha. During 1945-1956, development of the north south and east-west axis continued through the external areas (Atatürk Boulevard and Bahçelievler-Cebeci Axis). Those are the years when peripheral development of unauthorized housing within low-rise, medium density pattern raised. Another reason for the decrease in density level is unbuilt planned parcels in the ratio of ¾ intotal. Because of high land prices within planned area those plots stayed vacant for years, therefore it becomes the factor for decreasing gross density level. In 1956, the settled urban area reaches 3,650 hectares with an average density of 124 p/ha. That slight increase is due to plan revisions of Jansen Plan by relieving height restrictions in inner city (Yenişehir and Cebeci) in 1951 and development of multi-storey housing district (Yenimahalle) in urban fringe. By the year 1970, the population was estimated at 1,150,000 in an area of about 14,000 hectares with a density of 88 p/ha (Altaban, 1986a; Altaban, 1998: 47-52). Although tangible affects of planned vertical densification were realized in the beginning of 1970s, from that period, density level decreased to almost two third of the previous level. Hence, wide areas of open spaces –such as METU campus- are taken into consideration as integral

part of urban macro form. In 1985, density degree does not alter significantly. Growth rates of population and urban area are identical with each other. Tendency for decentralization comes out, but does not become influential till the 1990s. In 1990, gross density decreased by half. With 46 p/ha it is the lowest level of density measure, ever. In that period, development in western corridor results in population accommodations, changing the overall density pattern. The prominent shift in the increase of the area of Ankara urban form occurs about 1990, when the outward development was widely realized. After, the developments through the west of city, huge vacant lands and green areas are included within the overall body of urban form, even though the built-up areas remain roughly the same. From that period of time, mid-1990s, there was not a noteworthy change in coverage area of the urban form, while the rates of population increase are unlike those of area measure. Instead, new developments -especially in the southwestern corridor and Gölbaşı district- within almost the same diameter of urban form remain constant within the period of ten years. At present, the population of Ankara has reached 3.2 million and spread over an area of 66,000 hectares with a population density of 49 p/ha. Although new developments on the southwestern corridor have been increased the total urban area, it still remains within current radius of urban macro form. The total area of built-up urban lands are 21,3000 hectares in the year 2000. It is about one third of total coverage area of urban form. It seems that by infilling vacant lands in developed areas in the southwest sub-region, the increase rate of urban area will not be so high comparing to that of population increase. Therefore density level is to increase to some extent in the near future. Even though partial fragmented developments between the corridors are diminishing factors for overall compactness degree.

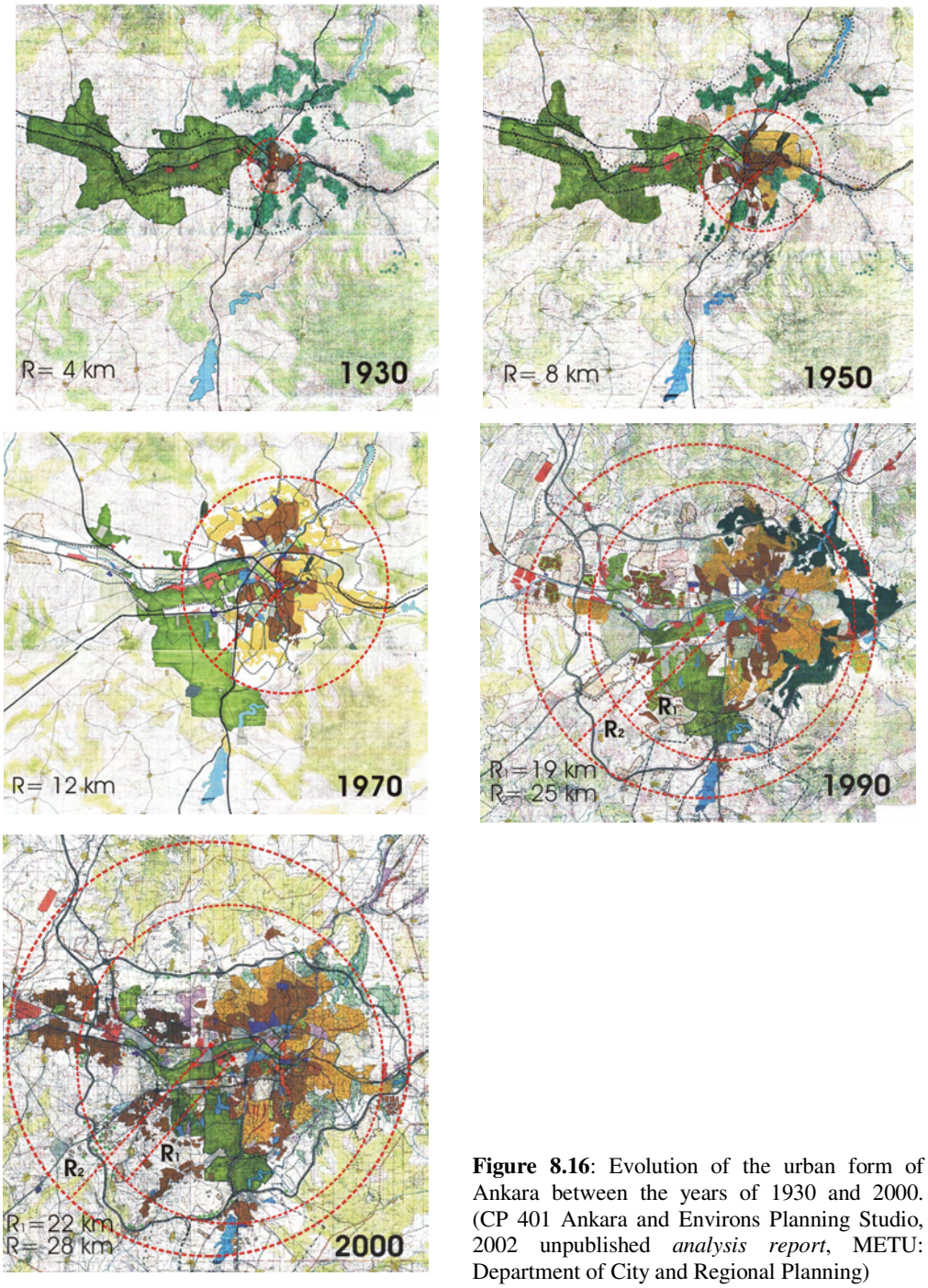


Figure 8.16: Evolution of the urban form of Ankara between the years of 1930 and 2000. (CP 401 Ankara and Environs Planning Studio, 2002 unpublished *analysis report*, METU: Department of City and Regional Planning)

Considering compactness measure, the changes in the area of Ankara urban form can be interpreted by means of the alternations of the radius of coverage area. In that sense, within twenty years after 1930 radius is increased by 100 percent. Such an increase is the reflection of rapid urbanization and emerging unauthorized peripheral development, from the beginning of 1940s. We observe the limitation effect of Yücel Uybadin and District Height Regulation plans on increasing radius of the development circle. It increases with a diminishing rate between 1950 and 1970. After 1970 a radical alteration is monitored from 12 km to 25 km due to decentralization policies introduced by Ankara 1990 Plan. On the other hand, outer circle of development can be misleading to understand 1990 urban form. Although large urban areas were developed by plan, it was not achieved enough population there to include all peripheral areas into existing urban fabric. Hence, almost 80% of population was still living within the radius of 19 km. Through the year 2000, inner circle increases only 3 km additionally, while outer circle reaches to 28 km with the same rate of increase. It is basically because of the development of the vacant lands in previously developed peripheral areas.

Until the mid-1970s, Ankara development pattern resembles the inherited characteristics of underdeveloped type of urban growth. Accordingly, existing urban fabric was being reproduced by continuous vertical densification by 'teardown and build' process and adjacent horizontal development by medium density peripheral unauthorized housing development. This process was kept on until the thresholds blocked further expansions and compelled new direction to expand. That form of development, which is named as 'oil-drop' in Turkish planning literature, absorbed fragmented open spaces into built up area (see: Figure 8.17) and produced an inflexible urban tissue with respect to the density pattern and solid-void relationship. Any alternative for a leapfrog-development should have considered the transcendence of surrounding public institutional areas around the existing fabric. Those elemental features of urban form made compactness figure negative in real case and obliged planning authorities to surmount the formation with relatively independent development zones outside the existing fabric. In the 1960s and the 1970s, renewal and redevelopment of inner central city and its adjacent urban districts were more valid and working due to the net marginal benefit of urbanization (Bilsel, 1977: 58). Hence, public provision of urban land was at an insufficient level to direct urban trend to outer vacant lands.

Such a continuous development form with amalgamation of adjacent areas preserves its validity till mid-1980s. In those years, evolution of urban form and structure is schematically observable and visible. From this period of time, the western corridor is visible as a linear extension of existing urban fabric rather than a decentralised growth region. After the implementation of partial plans on Eskişehir Road and İncek-Taşpınar Axis, the southwest part of urban form is tend to become a 'sub-region' rather than a corridor. In this sense, emerging urban form does not represent a gaped-structured urban body but still a unity by quasi-corridoric/regional extension to the west, even though the inner composition of compactness pattern changed. On the other hand, development in Gölbaşı district is not consistent with this kind of contiguity of the urban form. Although we do not measure such a

transformation pattern within urban fabric, we can state that emerging urban form consolidated vacant lands and open areas into the new unity and then alter density pattern dramatically.

When the transformation was going on in Ankara, with legislative and institutional reforms about local governments, planned development processes of most Turkish cities had significantly changed. By the partial plans of different authorities, uncoordinated developments began to be legalized. Real results of the process have been within a negative figure in Ankara. While, between 1970-85, when there was much more rapid urbanization, 5,500 ha urban land was developed, 11,385 ha additional land was allocated for housing between 1985-1993 by local plans. Almost 90% of it -10.272 ha- belonged to partial development-reclamation plans within inner city (Altaban, 1998: 64). Actually, such a desire of local municipalities to increase developed urban land resulted in an immense population pressure -more than 2 million- an existing urban fabric. It resembles to the densification process of District Height Regulation Plans from the 1960s.

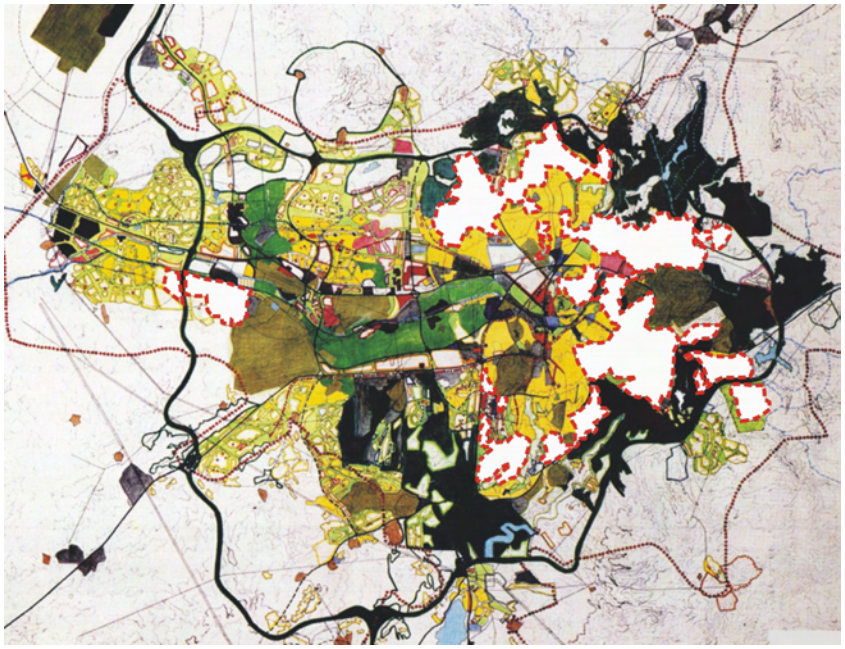


Figure 8.17: Areas of the reclamation-development plans, produced after 1984, within the land-use of map of Ankara 1993.

In the beginning of the 1990s, by the Law 2981, 13,000 hectares of total converge area of the Islah İmar Planları-Reclamation-Development Plans was completed. By the plans, total population in the same area was increased by 4 to 5 times. In other word, by partial plans, almost a second Ankara was tended to be created without any citywide grand policy. Such a densification shifted the gravity center of the city back to the inner city, rather than to western corridor adapted by Ankara 1990 Plan. (Bademli, 1999: 21). While total population in the regions, which were planned as reclamation areas

were 768,490 in 1990, it increased to 2.4 million in 1997 (CP 401, 2002: 404). This is an original process of urban intensification as the Turkish case, which can be considered as 'un-coordinated consolidation'. In this sense, unless surmounting the influence of reclamation plans, transformation of existing urban fabric in Turkish cities cannot go beyond densification to compaction in contemporary term.

Figure 8.18: Transformation of the consolidation process of Ankara inner-city between 1967-2000 (Source: city maps)

Urban infill has never been a public policy in Ankara. On the other hand, early infills until mid-1950s can be regarded as the intensification concerns to create an 'urban' entity with a sense of modern western town. In contrast, rapid urbanization pressure results in considerable amount of random and unplanned urban infills without any public intervention after the 1960s (Günay, 1992b: 15). Essentially, this is the process, which transformed inner-city urban form into a dull and sub-standard environment. Hence, the continuity in 2nd dimension of urban form was not supported by other compactness measures, such as diversity in functional term and fine-grain physically. As it is observed from the compositional schema of Ankara inner city area in 1967 and 2000, urban consolidation process has been realized despite partial green areas, some of which were unbuilt river basin. While Samsun Road through southeast axis was performing as a separator for central development constituting a discontinuity in the urban fabric, after the 1970s, it was no more a barrier. Since, a bulk typed homogenous urban tissue has expanded over in all directions including north areas, however big intuitional areas – such as Military Academy, SSK or AOÇ- remain as open spaces. Thus, they cut out the emerging physical contiguity of the fabric, to a certain degree. So, it should be admired for creating a standard value of 'compact' urban form of central city. After this consolidation process in existing urban fabric, green space standards of the city decreases significantly. While in 1950 there were 2.7 m^2 green spaces per person, this value is 0.83 m^2 in 1989. After the decentralization process, it raises to 1.8 in 1996 (CP 401, 2002: 420). Yet, the main reason of this degradation in standards is the unsustainable intensification process realized. Although it is hallowed in western cities, with respect to urban sustainability the uncoordinated intensification/consolidation cannot be considered as a positive figure for Ankara.

After depicting transformation of urban form and its compactness, in order to interpret its real consequences, it would be beneficial to look into its evolving performance on urban mobility and energy use[*], which are our main consideration items for a sustainable urban form.

[*] The data on transportation system and mobility pattern of Ankara is arranged by the combinations of partial data sets in separate transportation surveys for Ankara. See: EGO Ulaşım Planlama ve Raylı Sistem Dairesi Başkanlığı, Raid Crowther International IBI Group Toronto Transit Consultants, Kutlutaş, 1987 *Ulaşım Etüdü (1-2):Ulaşım Yapısı-Ulaşım Konut Anketi* –Transportation Study: Transportation Structure/Transport Housing Survey (Ajans İletim: Ankara), Ankara Büyükşehir Belediyesi Ego Genel Müdürlüğü, 1995, *1992 Ankara Ulaşım Konut Anketi Sonuç Raporu-1992 Ankara Transportation Housing Survey Final Report* (Ulaşım Planlama ve Raylı Sistem Dairesi Başkanlığı: Ankara), Ulaşım Art, 2002, *Ankara Çayyolu Metrosu Ulaşım Etüdü-Ankara Çayyolu Transit System Feasibility Study* (unpublished report)

Table 8.4: Intensity of land-use in global cities. (Adapted from: Newman et. al, 1999: 94-95, 1970 Yılı Ankara Konut Dışı Kullanışlarda Toplam Alan /İşyeri /Ciro (Ankara Metropoliten Alan Nazım Plan Bürosu- 1970 Yılı Ankara Çalışması, ATO İşyeri İstatistikleri, 2000)

City	Metropolitan Density	
	Population	**Jobs**
San Francisco	16.0	8.5
Los Angeles	23.9	12.4
Detroit	12.8	6.1
Boston	12.0	7.1
New York	19.2	8.7
AMERICAN AVG.	14.2	8.1
Canberra	9.5	5.0
Melbourne	14.9	5.9
Sydney	16.8	7.2
AUSTRALIAN AVG.	12.2	5.3
Vancouver	20.8	10.5
Toronto	41.5	23.2
CANADIAN AVG.	28.5	14.4
Brussels	74.9	46.8
Stockholm	53.1	39.3
Copenhagen	28.6	16.0
Paris	46.1	22.1
Munich	53.6	37.2
Amsterdam	48.8	22.2
London	42.3	23.6
EUROPEAN AVG.	49.9	31.5
Kuala Lumpur	58.7	22.4
Singapore	86.8	49.3
Tokyo	71.0	73.1
Bangkok	149.3	62.4
Hong Kong	300.5	140.0
ASIAN AVG.	161.9	72.6
Ankara 1970	88	1.2
Ankara 1985	85	-[x]
Ankara 2000	49	1.1

[x] The dataset on the number of work places is based on the year of 2000. In that database the businesses, which have been closed since 1985 is disregarded by the year 2000.

Comparing the density measure of Ankara, with those of world cities within the categorization of America, Canada, Europe, and Asia[*], we can position the compactness degree of Ankara. Taking the values of separate three periods, we can divide the compaction behaviour of Ankara in two phases: Before 1985 and after 1985. Before the year of 1985, the density level is identical within last fifteen years. In that stage, compactness degree of Ankara is in-between European and Asian average. With the real effects of outward growth of the city, density measure decreases to 49 p/ha and it precisely reaches the European standard. On the other hand, these density measures should not mislead us. Hence, the density level is determined by overall coverage area, which has huge amounts of vacant lands and green areas, which are at the proportion of about two third. So, when we take the total area of built-up land, 21,300 hectares, the density measure drastically increases to 152 p/ha.

The measure of job density is significantly lower than those of other world cities. In 1970, there were 17,140 businesses within different scales. With this number, the job density in the total urban area is 1.2 businesses per hectare in this year. By the year 2000, the density level does not decrease considerably and remains at the value of 1.1. Remembering the characteristics of Ankara urban form with the areas of vacant lands; the measure of built-up areas is also employed for the issue of job density. Considering total number of businesses by the year 2000, which is 73,259, the job density degree sharply increases to 3.4, which is three times of that of the total area of urban form, including vacant lands.

It is important that density indicators should not direct us to such an interpretation that Ankara has the same compact character with European cities. Since, general features of the space structure of European cities are clearly different from Ankara. While the European City historically had expanded to wider geography with medium to high-density urban pattern, Ankara has grown within limited diameters with relatively high-density urban fabric of apartment blocks.

[*] Database, which we benefited from, is based on the year of 1990, colleted by Newman et al. Unavailability of upgraded data-set make us compulsory to make the comparison with that period of time. We assume that cities in developed countries are stable and their indicators do not tend to change rapidly within ten-year-period, whereas developing cities like Ankara have more dynamic character, at all.

Table 8.5: Annual travel by private and public transportation in world cities, 1990.
(Adapted from: Newman et al., 1999: 84-85)

City	Annual Travel in Passenger Cars (passenger km per capita)	Annual Travel in Public Transportation (passenger km per capita)	Total Annual Travel (passenger km per capita)
San Francisco	16,229	899	17,129
Los Angeles	16,686	352	17,037
Detroit	15,846	171	16,018
Boston	17,373	627	16,018
New York	11,062	1,334	12,396
AMERICAN AVG.	16,045	474	16,519
Canberra	11,195	660	11,855
Melbourne	9,782	844	10,626
Sydney	9,417	1,769	11,186
AUSTRALIAN AVG.	10,797	882	11,679
Vancouver	12,541	871	13,412
Toronto	7,027	2,173	9,200
CANADIAN AVG.	9,290	998	10,288
Brussels	6,809	1,428	8,237
Stockholm	6,261	2,351	8,612
Copenhagen	7,749	1,607	9,356
Paris	4,842	2,121	6,963
Munich	5,925	2,463	8,388
Amsterdam	6,522	1,061	7,583
London	5,644	2,405	8,049
EUROPEAN AVG.	6,601	1,895	8,496
Kuala Lumpur	6,299	1,577	7,875
Singapore	3,169	2,775	5,944
Tokyo	3,175	5,501	8,676
Bangkok	4,634	2,313	6,947
Hong Kong	813	3,784	4,597
ASIAN AVG.	2,772	2,587	5,359
Ankara 1985	411	1980	2,391
Ankara 1992	860	2288	3,148
Ankara 2003	2203	3338	5,541

To support such a statement above, the measure of annual travel distances per capita can be beneficial. Here, although it increases twice since 1985 and still it does not achieve European average. Yet, it is more than Asian level. This situation is not because of the density measure of Ankara, but due to its bounded area of urban form with the same density degree as Europe. The break point for Ankara on travel distances by car is the mid-1990s. Accelerating outward growth of Ankara, with -relatively car dependant- lower-density urban pattern, results in a rapid increase in total trip per capita, average car travel distances and in the ratios of car trips in this period because of lower car-ownership, however, it remains at the lowest level among the others.

Table 8.6: Growth journey-to-work trip lengths in World cities, 1980-1990
(Adapted from: Newman et al., 1999: 106)

Cities	**Journey-to-work length (km, 1980)**	**Journey-to-work length (km, 1990)**
American	13.0	15.0
Australian	12.0	12.6
Metro Toronto	10.5	11.2
European	8.1	10.0
Asian (Wealthy)	NA	NA
Ankara	6.17	7.08

Apart from the density creation, expansion of the urban form of Ankara decreases the degree of urban compactness from another aspect: intensity of urban uses. Such an evaluation can be tested by differentiation of average distances between residential and working areas within the urban body. From 1980, trip distances to work are in a constant change in through an increase. In twenty years it raised from 6.1 km to 10.22 in average. This is due to decentralization of residential areas without central non-residential functions to the periphery of urban form. In this sense, it shows a similar character to European cities in 1990 values. Before decentralization phase in the 1990s, Ankara represents a more compact character regarding the intensity item –lowest level of trip lengths among the others.

Table 8.7: Relative performance and provision for transportation modes in world cities, 1990. (Adapted from: Newman et al., 1999: 82-83)

City	% of Total Passenger km on Transit	% of Work Trips on Transit	% of Work Trips by Walking and Cycling	Transit Service Level (vehicle km of service per person)	Road Supply (meters per person)
San Francisco	5.3	14.5	5.5	49.3	4.6
Los Angeles	2.1	6.7	4.0	19.8	3.8
Detroit	1.1	2.6	2.0	14.0	6.0
Boston	3.5	14.7	7.4	36.0	6.7
New York	10.8	26.6	6.7	62.8	4.6
AMERICAN AVG.	3.1	9.0	4.6	28.4	6.9
Canberra	5.6	10.0	6.0	67.9	8.8
Melbourne	7.9	15.9	4.7	49.9	7.7
Sydney	15.8	25.2	5.5	94.0	6.2
AUSTRALIAN AVG.	7.7	14.5	5.1	60.0	8.3
Vancouver	6.5	12.4	5.7	50.3	5.1
Toronto	23.6	30.1	5.3	98.4	2.6
CANADIAN AVG.	10.2	19.7	6.2	58.0	4.7
Brussels	17.3	35.3	19.1	62.7	2.1
Stockholm	27.3	55.0	14.0	133.2	2.2
Copenhagen	17.2	25.0	32.0	121.3	4.6
Paris	30.5	36.2	14.9	71.0	0.9
Munich	29.4	46.0	16.0	91.4	1.8
Amsterdam	14.0	25.0	35.0	60.3	2.6
London	29.9	40.0	14.0	138.4	2.0
EUROPEAN AVG.	22.6	38.8	18.4	92.5	2.4
Kuala Lumpur	20.0	25.5	16.9	49.7	1.5
Singapore	46.7	56.0	22.2	114.0	1.1
Tokyo	63.4	48.9	21.7	89.3	3.9
Bangkok	33.3	30.0	10.0	110.3	0.6
Hong Kong	82.3	74.0	16.9	140.4	0.3
ASIAN AVG.	48.7	45.1	19.0	110.2	1.1
Ankara 1985	77	68	21	7.01	1.95
Ankara 1992	66	52	32	9.00	NA
Ankara 2003	58	54	18	11.04	1.87

With the assumption that modal split of the transportation system is one of the indicators of urban compactness for cities, we can depict the relative performance of Ankara urban form in the issue of mobility pattern. Therefore, the share of transit in the system can give some clues about the feature of urban form. In this framework, when we look into the measures of total passenger per kilometer on transit we perceive a decisive decline. Here, introduction of the first light rail system in 1993 does not seem to be influential to increase the measure. It is due to the fact that a replacement between the bus system and the railway system was experienced. While the total population and car ownership raises, percentage of the total transit trip distance reduces within constant line lengths. On the other hand, we should not draw such a conclusion: "Percentage of total km on transit is even higher than Asian super-compact cities. So Ankara is more compact than Asian cities." In contrast, it is the direct result of low a level of car ownership in Ankara, making the rate of transit travels relatively high.

Additionally, there is an inter-relation between transit use and walking trips to the work areas, which gives an indication about the grain of non-residential areas within urban form, as an item of urban compactness. From 1985 to 1992, there is a discernible shift as a decrease in transit trips and an increase of in walk/cycling trips synchronically. For the same reason, quoted above percentage of transit trips reduced. The main reason of the increase in walking/cycling trips is the expansion of CBD and the creation of sub-centers such as Maltepe, Bahçelievler or Çayyolu, which can serve much more people within walking distances. On the other hand, the prominent factor behind the decline of walk/cycle-base trips within last ten years is low-density –mono-functional- residential districts, especially in new development zones. Yet, in this condition Ankara's transit ratios in work trips is at the highest level. Moreover, current work trip ratio on walking is much more than American, Australian and Canadian cities and at the level of European and Asian compactness.

Since outward growth of Ankara is not realized by a western-type of suburbanization process, which is dominantly car-dependant, transit service level does not reduce. Instead, it increases slightly with additional municipal bus service lines within growing urban body. It is even under the level of American cities, which represent radically private vehicle-dependant and non-transit urban model.

The measure of road supply per person decreases within last fifteen years. It is because of increasing population against relatively non-increasing provision of road space. Structural connection roads were almost completed in the year of 1985, when new development direction was already designated. With current values, Ankara depicts a compact feature, when compared to others, since the value of 1.87 meters per person is under the level of European cities.

Table 8.8: Car ownership, usage and their relation to transit and GNP* in world cities 1990. (Adapted from: Newman, 1999: 80)

Cities	Car Ownership per 1,000 People	Car Usage (pass. km/person-annual)	Transit Usage (pass. km/person-annual)	Total Travel (pass. km/person-annual)	GNP per Capita ($US, 1990 per person)
American	604	16,045	474	16,519	26,822
Australian	491	10,797	882	11,679	19,761
Canadian	524	9,290	998	10,288	22,572
European	392	6,601	1,895	8,496	31,721
Asian	109	2,806	2,587	5,393	9,018
Ankara 1985	37	3,299	2,555	5,854	2728
Ankara 1992	84	4,073	3,555	7,628	2664
Ankara 2000	134	5,292	4,745	10,037	2989

Naturally, the statements above are highly related with the general character of car dependency versus transit-oriented nature of urban form, by definition. From the data sequence, we can infer that car dependency in Ankara is obviously in increase. It is much more as a result of neo-liberalist policies introduced after the 1980s in Turkey, which encouraged private auto-usage in general term. Claiming that increased car ownership has being fed by counter-compactionist transformation of urban form would be an overstatement for Ankara. Instead, it can be stated that increased car ownership and diffusion of urban form has become complementary processes with each other, synchronically. Only from this information, we can assert that compactness degree of Ankara is in-between European and Asian cities. It is consistent with the previous statements on density measures and travel distances. Furthermore, we can infer that car ownership is not a dependant factor solely to economic wealth, but also on urban physical/spatial structure. Even though the GNP per capita is less than half of Asian average, Ankara has higher level of car ownership with its less intensified urban form than that of Asian cities.

Positioning of the compactness of Ankara urban form can also be supported by the value of annual passenger kilometers by car. With 5,292 km, Ankara has closed degree with that of European cities, although car ownership is almost one fourth of them. It can be taken as an indicator of lower level compactness of Ankara macro form, with regard to the variables of contiguity and intensity of the urban form at all. Stable increase in the item is also a verification of increasing distances within urban fabric in transformation.

* GNP data for Ankara see: T.C Başbakanlık Devlet İstatistik Enstitüsü, 1997/2000 İllere Göre Gayri Safi Yurtiçi Hasıla (DİE Matbaası: Ankara) GNP values for the years are calculated by 1987 prices.

Increasing average trip distances in total becomes a complementary factor for a steady increase in transit usage. Even though car ownership has extended over time, it does not prevent transit usage completely. It is just because of the non-suburban character of the decentralization of Ankara, which is provided by municipal bus fleets for the close contact of peripheral areas with central city.

When we have a look at the change in GNP measure, we can see a responsive relationship with increasing car ownership and usage. On the other hand, we cannot construct a clear connection with the increase in transit usage. It is anticipated that by increasing economic wealth, the ratio of transit usage would reduce. But it has being practiced in Ankara inversely. It is basically because of the low level affordability of current GNP level for car usage within increasing average distances of developing urban fabric.

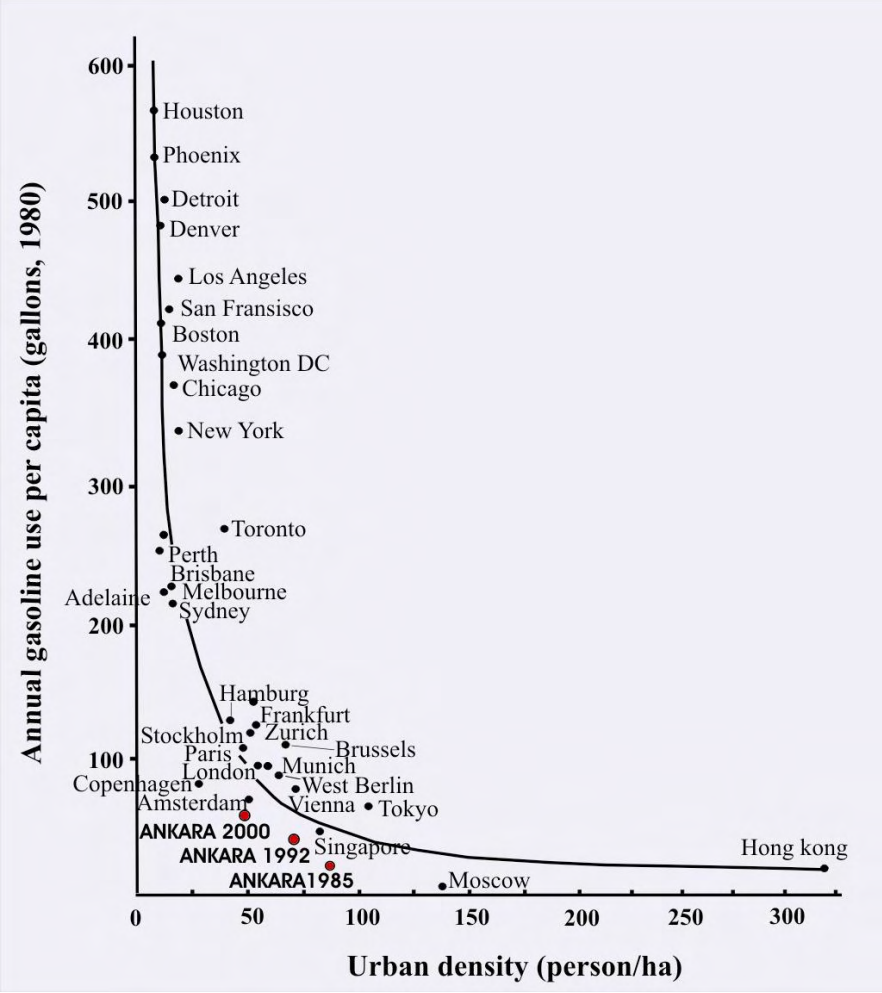


Figure 8.19: Gasoline consumption per capita versus urban population densities in thirty two World cities. (Adapted from: Newman et al., 1989: 31)

After the comparative analysis of the mobility patterns of selected World cities with regard to their compactness degrees, we can position the city of Ankara in a broad view of the gasoline dependencies of the urban forms. By integrating the city of Ankara into the relational diagram of 'gasoline use per capita related to urban densities', given in previous chapters, we can draw a conclusion about the sustainability performance of Ankara urban form with respect to the problematic of energy use. As we quoted, low gasoline consumption in transportation is one of the sustainability criteria for the cities. It can be ensured by the effectiveness of public transportation –especially transit- and guaranteed by certain level of urban densities.

When we look into three levels of gasoline consumption of Ankara, we observe a significant shift in measure between 1985 and 2000. Such an alternation derives from the changes in both physical and socio-economical structure of the city. Physically, as we cited above, Ankara was in a substantial transformation. Corridoric outward development to the west was accelerating and both city structure and density pattern of urban form were transforming. Relationally, overall density level of the city was dropped fast within a short period of time. Socio-economically, after introducing neo-liberalist policies, car-ownership ratio in a wide group of middle-class families was to be increased substantially. Supported also by increasing travel distances in time, gasoline consumption level inevitably raises from 21 gallons* in 1985 to 43 gallons in 1992 and eventually 58 gallons per capita annually in the year of 2000.

With the last level of gasoline consumption reached in 1992, the position of Ankara is in between those of Asian cities. But it is not because of the density factor, since, density degree of Ankara is about one third of Asian average. In this sense, it would be expected that consumption level of Ankara would be much higher than that of denser Asian cities. Yet, the situation is different. Therefore, it is mainly caused by the identical average values of travel distances per capita and car ownership in Ankara and Asian cities, which are both under American, Canadian, Australian and European standards. In the year of 2000 both average travel distance and car ownership values of Ankara are higher than those of Asian cities. Thus, the position of Ankara in the diagram shifts from those of Asian cities, decisively.

In the last phase, by means of continuing outward development, Ankara almost achieves the average density degree of European cities. Yet, the gasoline consumption level is still under the European average. The reason why the gasoline consumption of Ankara is under the average level of European cities, despite approximate densities, is twofold: First, the level of national economic wealth and car ownership as a result is much lower than those of European cities. Therefore, socio-economic conditions become constrain for excessive consumption in transportation of Ankara. Second, average journey to work lengths and total travel distances per capita in European cities are higher than Ankara. It is not a surprising reality that post-war experience of suburbanization brings relatively high car-dependencies and long-distance mobilities in Europe, when compared to Ankara, which has

* 1 US gallon = 3.78 liters

dominantly developed by the fashion of developing countries, historically. This is another physical factor for the consumption levels determined above.

From the figures mentioned before, we can conclude that the attitudes on urban mobility and the sustainability character of cities may not be explained by solely referring the features of urban form. Urban compactness, and especially density figure, would not always be illuminating like in the case of Ankara. Therefore, compactness item should be supported by the nature of mobility behaviors and socio-economic capacity for the mobility level of the cities. Besides, the main factor of the relative sustainability performance of the cities still seems to be based on the physical aspects of their urban form, particularly urban compactness.

Table 8.9: Comparison of two small new towns, Milton Keynes (England) and Almere (Netherlands) and Çayyolu* Ankara new development district, in travel and land use characteristics. (Adapted from: Newman et al., 1999: 169, photos: personal archive, http://www.mkcd.org.uk/library and http://www.aerphoto-shipol.nl/almere.htm)

	 Çayyolu_Ankara_Turkey	 Milton Keynes_UK	 Almere_Netherlands
Modal Split			
Car	45%	59%	35%
Transit	45%	17%	17%
Bicycle	10%	6%	28%
Walk		18 %	20%
Average travel distance	17 km *-4 km for Ankara_metropolitan-*	7.2 km	6.9 km
Percentage of trips under 3 kilometers	5%	45%	85%
Density	15	20	35-40
Description	Heterogeneous, fragmented and mono-functional	Scattered form, separated use	Organic, mixed-use
Percentage who see a car as "essential"	40%	70%	50%
Percentage of households with children who are always supervised outside home	75%	52%	16%

* The data on Çayyolu district are based on the household surveys, conducted by F. Zorlu in 2003 for the unpublished PhD thesis.

In time, the city of Ankara has achieved, not dispersed but an expansive/unrestrained form of development. In fact, it is to meet all expenses of uncontrolled urban expansion. Unless counter-compact transformation occurs, one of the most critical problematic would emerge within next decades: Feasibility of regenerating aged inner city urban fabric with lower net benefits economically.

Within intermediate-term, the compactness degree of Ankara will be determined much more dominantly by new development zones, chiefly western development corridors, which are currently tend to become a 'region'. Rather than western corridor of Istanbul Axis, southeastern corridor of Eskişehir Axis has a more dynamic character with regard to experienced trends in the last ten years. Thus, to predict the potential form of urban compactness of Ankara in near future, the urban form, produced in Çayyolu district, should be well analyzed and characterized, with respect to some items, above. Then again, -without going into details- Newman et al.'s comparison of two European new towns, Milton Keynes-UK and Almere-Netherlans would be beneficial. Here, Milton Keynes represents a classical figure of The British Town Planning, as a production of "nothing gained by overcrowding" school, with its low-density, strictly zoned, counter urbanist form and image. On the contrary, Almere, a Dutch new town, corresponds to European tradition of town building at the density level, which enables walking and cycling as major transport mode.

Within those prototypes, Çayyolu district, a model of new town in Turkish case, is positioned as the production of lowest-level urbanity. When we compare density measures, we saw that the loosest form of settlement belongs to Çayyolu district, with the density of 60 p/ha. The real consequence of this physical formation is initially the highest-level average travel distances. Again from the same reason above –low-car ownership-, counter-compact urban form does not result in high proportion of car use in Çayyolu, as expected. The most dramatic result is about the percentage of trips fewer than 3 kilometers, which corresponds to non-motorized trips. It is also an indicator of its dominantly residential character of the district, which does not allow any diversity for a compact urbanity. By contrast to this figure, most people living in Çayyolu do not consider car essential. This can be due to the higher rate of transit usage in modal split than those of others. From the last two implications we can beware that fragmented, low-density urban forms, like those of Çayyolu and Milton Keynes, do not provide secure pedestrian environments, they rather provide a sovereignty of road spaces in between scattered urban body.

From all above, it can be concluded that 'the recent Turkish urbanism' in Ankara case has been alienated from the contemporary approach of urbanity, which is prominently defined by urban compactness. Instead, it presently represents an unsuccessful replica of outdated Anglo-Saxon urbanism, based on low-density, expansive development. Under those conditions, sustainability performance of urban form is to be diminished, at least with regards to the quality of urban space and the efficiency of urban mobility.

CHAPTER 9

CONCLUSION

The current experience of Turkish urban planners and policy makers in the mid-20th Century is basically what the planning circles in Western countries had practiced in the late-19th Century in the context of urban compactness. Negative real externalities of compact urbanization of Western cities gave birth to reactions to the intensification and concentration phenomenon, within the expression of *disurbanism*. Similarly in Turkey, rapidly practiced urbanization, which gave rise to an immense densification in urban space, directed planning professionals and their common ideological stances to a positioning in the side of *anti-centrism* and even *anti-urbanism*, deliberately or not. On the other hand, it should not be inferred that the other planning experiences in Ankara, producing intense urban form were ideologically in *compactionist/urbanist* point of view. The prevailing preferences of high-density were much more the result of pragmatist considerations. Such considerations are meeting speculative demands by giving additional development rights within the existing urban fabric and minimizing the cost of urbanization by keeping density level at certain degree. At this point, such a perspective without an ideological concern can also be considered as *anti-urbanist*, when regarding the characteristic of urban space produced. This is the reason why; the product to be such a space typology does not refer any contemporary components of urbanity, except being dense.

So, from the Turkish case of Ankara we learn that, urban high-density does not necessarily mean urban compactness. Hence, density is a necessity but does not always grant the sufficient condition to ensure a livable urban compactness within a contemporary understanding. Uncoordinated densification process, practiced in Ankara, proves such a statement and prevents us to salute all sorts of centrist mode of space production, with an a-priori conception. Since, the most serious critiques toward compactionist/centrist perspective derive from such a radical positioning of centrists, which do not take negative versions of concentrated space typologies into consideration. On the other hand, such a radical advocacy of centrism can be seen as a drastic answer to enduring demolishing effects of modern decentrism, especially since the post-war period in Europe.

Naturally, such a fundamental centrist perspective cannot be expected from Turkish planning society. Hence, negative reflections of pragmatist, uncoordinated intensified urban fabric of Turkish cities are still being realized in most cases like Ankara, in Turkey. Nevertheless, contrary envision of urban

space, in both macro and mezzo level, is to be result in such an approval of decentralist/disurbanist development models, which have already been negated by European design and planning circles. At the point, achieved in the length of time, planning professionals and Turkish urban intellectuals have to re-evaluate the real results of the process, experienced. As a prototype of rapidly modernizing society in Eurasia, historical experience of western urban world provides certain clues for such a self-re-evaluation. We can infer from the theoretical accumulation of planning practice in developed countries that urban compactness is categorically vital for an economically, socially, culturally and ecologically sustainable urban system.

For the most of developing urban societies in underdeveloped world, addressing urban compactness may be meaningless and odd. It is just because of the originality of 'developing compactness' and its elementary differences from developed ones. Since the 'post-industrial compactness', has generated within a planned process and by means of pre-determined design codes in Western countries after the 'modern decentralization', it is an urban condition to be achieved. Instead, in most of the developing cities, urban compactness is a fact to be avoided. It is an inevitable production of the scarce conditions of underdeveloped economies. Therefore, minimum standard of urban compactness remain in an inadequate level. On the other hand, decentrist recipes cannot be a working solution for developing cities. As seen in the Western experience, such an urban formation based on an open/deconcentrated system would be unaffordable for the 'developing south'.[*] The same determination is valid for Turkish cites, with relatively low capability of mobility and present national dependency to foreign petroleum provision and supply. From this point of view, any compactionist claim cannot be considered as a nostalgic urban imagery in Turkey, like some of those in developed countries, since it directly results from the real circumstances and necessities of the country,

Although many planning and design schools are honoring it, even today, decentrist policies, encouraging counter-compactionist development patterns, -from suburban developments to urban sprawl- do not coincide with real conditions of the cities of developing countries, which are relatively more compact by nature. Yet, it does not mean that popular compactionist policies, which are theoretically developed from the objective conditions of developed world, can be absolute formulation for the planned transformation of developing cities, today.

In this sense, urban intensification/consolidation policies remain alien to Turkish case, since under those conditions; the major problematic is not consolidating the urban fabric, which is already intensified up till now. In that sense, the chief consideration becomes providing possibilities for keeping vacant lands unbuilt as open/green spaces in dense built-up urban bodies, in Turkey. Hence, in Türkiye Ulusal Rapor ve Eylem Planı- National Report and Action Plan of Turkey, presented to 1996 Habitat II, it is clearly stated that controlling built-up environment is much more important than that of non-built-up environment. Thus, Turkish planning system should be supported by the planning

[*] Actually, the behaviour patterns of the actors in international relations and current global policies can be analyzed by means of the conceptualization of the urban systems of the countries with respect to the 'sustainability' of their established urban conditions based on decentralization and centralization

tools, which guarantee vacant lands within built-up areas 'to remain vacant'. For such an aim, three planning policies are suggested: Restrictions on development rights, increasing stocks of urban land, which is publicly owned to direct future development trends; and lastly, discouraging further developments on vacant land by means of planned infrastructure investments (National Committee, 1996: 147-148). When we look into the policies, suggested for Turkish cities, we can identify them as a decentrist point of view. On the other hand it cannot be labeled as disurbanist positioning. Hence, the main consideration here is not to dissolve intensive urbanity, rather to rehabilitate it. Actually it is a reaction to conventional 'compactness' of Turkish City, overall. It also represents common ideological stance of Turkish planning society, today. The main handicap of that standpoint is not to present a future perspective for current trend of Turkish cities, like Ankara, experienced in an original process, which is based on counter-compactionist urban expansion.

Under this circumstance, as seen in the case of Ankara, the chances to be developed in metropolitan form, allowing decentralized concentrations as one of the alternatives of compact development pattern was lost by that time, in many cities in Turkey. Even though, by the 1970s, operational capacity for such a formation was acquired in Turkey. -for example, enhanced mass housing supply by cooperations, organization of industry in sites/regions and re-location of public institutions in campuses.- Although economically such a transformation would have ended in a kind of urban form, including open areas in-between concentrated nodes, physically, a concentrated decentralization had not actually experienced. Instead, in-between vacant lands faced partial development pressures of speculative demands. Furthermore, the process is supported by another fact that previously peripheral unauthorized housing districts are to be transformed into high-rise, sub-standard apartment settlements by small entrepreneurs. As a result, another version of previous 'oil-drop' expansive urban form before the 1970s is being produced today[*]. In this sense, the case of Ankara resembles to such a formation from an extent. Indeed, such a mode of urban form cannot be considered as a kind of compact city model, regarding the contemporary definition of urban compactness.

Such a typology of urban form can be categorized as '*Turkish-type urban compactness*' based on a continuous urban body within the 2nd dimension of urban layout and the 3rd dimension of density surfaces. Despite the fact that car ownership has been increasing since the 1980s, that development does not produce a radical alternation to enduring 'developing compactness' in Turkey. It can be due to the relatively lower level of the mobility in Turkey, comparing with developed countries.

Such a framework depicts Ankara as an example of Turkish cities representing a position in between European and Asian mode of urban development, with respect to the problematic of urban form. Obviously, it is not an unexpected conclusion for the capital city of a Eurasians country, theoretically. From that point of view, a possible compactionist/centrist/urbanist policy perspective in a holistic

[*] For a similar example from Turkish cities, see: Sazak, Ş., 2001, "Metropoliten Kentin Etki Alanında Kalan Kentlerin Çeperindeki Arsaların Dönüşüm Süreci: Çorlu/Büyükkarıştıran Örneği- Transformation Process of The Urban Lands in the Peripheries of the Cities In the Influence Area of Metropolitan City: Çorlu/ Büyükkarıştıran Case" *Planlama* **1-2**, 22-30

manner should not be produced free from the original border-conditions of Turkish context. Otherwise, Euro-centrist mode of thinking would produce irrelevant argumentations on 'developing compactness'. This statement is naturally valid for other cities in the developing world.

Fro this point of view, examining Western experience of urbanization would be considered as a paradox before the evaluation of the urban compactness of Ankara. Yet, depicting the urbanization process of western world in historical context cannot be a contradiction to identifying the urban formation in developing countries. Urban experience of developed countries still provides an immense theoretical background for developing urbanizations. As we cited in the study, fundamental preferences on concentrated versus deconcentrated urbanization has not been a linearly constant process in urban history. Instead it is realized by the falsification of previous phases and transforming socio-economic structures. We symbolize that fact by means of the 'pendulum'. Each falsification brings about a new model, imagery and envision. The idea of Compact City should be taken into consideration within this framework. On that point, in order to testify the relevance, currency and rationality of the popular motto of compact city in developing cities, it is vital to re-consider the historical causality of urban compactness in urban history. By doing that, real results of the contrary peaks of 'urban pendulum' provide a set of clues to appraise the evolving phenomenon of urban compactness in developing world.

From this perspective, applying the technique of urban pendulum becomes beneficial to interpret planning experiences and real transformation of the urban form Ankara. Here, it was detected that the tendency in planning approach gradually shifts from centrism to decentrism. Such a swing in planning ideology ends up with an unconscious disurbanism. Combined with the development of the socio-economic structure and socio-behavioral pattern in the city, urban form of Ankara has been evolving through a counter-compactionist formation. Considering the affordability of such formation for the city of Ankara –especially with relatively lower GNPs than other world cities- and real consequences, faced in formerly decentralized western cities, the enduring trend in Ankara cannot be positively approved. It induces unsustainable set of relations not only between man and man but also man to nature. The increasing energy consumption by counter-compact urban development pattern is an emphasized phenomenon in the study, as an example of the second mode of sustainability.

Emphasis on the issue of energy use is not an unconscious preference. The reason why we designated compactness problematic in that concern is to answer that question: What is contemporary relevance and currency of urban compactness, which has become a motto of sustainability? When the literature on sustainable development is viewed, the main drive behind the model of sustainable urban form is detected as the search for preventing uncontrolled energy use and consumption of scarce resources, a prominent item of urban agenda today. At the position, which has been reached by sustainability perspective, it is widely accepted that engineering solutions -both technical and social- would not be beneficial to the problem at all. Rather, a more structural transformation concerning space is much more required. Actually, the models on sustainable urban form, which are less resource consuming,

stem from such a consideration. From that vitality, urban compactness is addressed as a planning and design criterion today. Its rationality basically derives from the space structure and it is suggested in both macro and mezzo scales. This space vision can be constructed either at macro urban level -even at metropolitan- or in the context of urban district. At any level, it provides the requirements of spatial compactness: *Proximity, centrality, contiguity –coherence-, density, diversity, intensity and fine-grain.* In the context of urban form, those figures engage a settlement model that provides more closed relationships, not allowing redundant mobilities in space.

It is interesting that to conceptualize urban compactness; elementary concepts of basic design are used. While explaining the problematic of urban compactness, a set of design terminology is employed to clarify functional performance of planning policies, shaping the urban form. Actually, this was one of the challenges of the study. Hence, we claim that the issue of urban form cannot only be a problem of urban planning but also a consideration of design. Here, the question of urban compactness within itself supports such a point of view.

Dominant functional concerns of urban planning – such as growth, preservation, and efficiency etc.- can be carried to new explanatory area of the question of 'form' by creating a new set of evaluation criteria. Doing this, such considerations can be re-rationalized in a new framework, even in metropolitan context like the case of Ankara. If that outlook is combined with a procedural outlook, considering economic structure, social actors etc., any critique of urban form provides us a much more holistic framework. It goes beyond an argumentation of solely a 'shape' or abstract 'processes'.

The concept of 'form' gives direct reference to the end point by its nature; therefore it runs the risk of being out of context in the era of rapid economical and socio-political transformation. By including procedural aspects in addition to the aspects of the end-state, the debates on urban form would become much more adaptive, flexible and operational in urban planning practice in the future. Therefore, the problematic of urban compactness should be constructed on a multi-dimensional framework, including economical, cultural, political and spatial dynamics of space structuring.

To design a holistic framework, considering both design and planning solutions within compactionist perspective, it is necessary to identify the dynamics, which can be differentiated from one society to another. Such a determination would perform as a basemap for a policy structuring. Sub-titles of the framework, as inputs of the formation of urban compactness can be clustered around certain issues, which are also the drive behind urban form in a broad sense by definition: *Techno-economic paradigm, cultural preferences, planning policies, land market and cost of urbanization, growth management, design coding -settlement layout- and transportation system* (see: Table 9.1). Components of those sub-titles can be regarded as ingredients of the formation of urban space, as well. What constitutes the structure of the relationship is the set of opposition between the components. Actually, the antagonism between characteristic features shape/transform urban space into compact or loose/dispersed manner.

Table 9.1: Dynamics of the formation of urban compactness.

As understood from the figure, the problematic of the compactness of urban form is highly correlated with the political characteristic of planning regimes. It is obvious that compactness requires a powerful and decisive mechanism for the control of urban space. Hence, a successful compact urban form policy initially depends on an effective planning system supported by strong financial instruments and widespread public support and multi-leveled administration. From this point of view, the problematic of urban form turns out to be an ideological consideration, as well as political and technical one. Various combinations of the components in contradiction serve a separate mode of life for societies. Here, which ideological sources feed urban compactionism becomes an important issue to be clarified. Thus, in the study, we traced its ideological roots from the historical antagonism between centrism and decentrism in spatial context. By doing this, we detected the continuity between centrism and compactionism, regarding the visions, which had been offered by different approaches until today.

What is of importance here is the transformation of the motives behind those fundamental positionings. From historical patterns of ideological encamping on centrism and decentrism, it is perceived that the basis of conventional legitimacy behind the positions have been turning upside down today. While, in the past, decentrality was advocated for a motivation of 'good life', the same motive is being utilized by compactionist perspective, today. Even though, in the past, decentrism represented a reformist/progressist positioning, its promotion is being made by much more 'free-marketers', who claim that any planned interference for compaction causes problems in market rationale. In that sense, advocacy of compact cities is unavoidably driven with the promotion of 'planning', simultaneously in the countries like Turkey, which are being developed by the policies of free-market economy.

When we take the compact city debate as a whole, it can be concluded that, there is a significant gap between theory and practice on the issue. Most of the claims -against to or in favor of compactness- are waiting to be proved in real cases. Hence, the assertions remain at principle level, not sufficient to make realistic evaluations. Such a situation causes compact city arguments not to refer to the practical processes lived and planning policies designed. The feasibilities of compact urban form are not clarified in strategic context and cannot be presented to policy makers as a reasonable development policy. To get rid of this handicap, the claims on compactness should be supported by the set of design criteria and principles related to both macro and mezzo scales. Although we did not specify them precisely throughout the study, we tried to identify the conception of compactness by determining the framework. Unless it is practiced, the declaration of compact city would remain as a motto, which is not beyond solely an ideal or a nostalgic metaphor. Then, shaping the future of urban compactness would become impractical.

Considering the compactionist visions, in limited number, as a whole, we realized their incapabilities to give adequate answers to future dynamics of urban form. With this regard, 'bounded city' concept is turning to be irrelevant in today's dynamic urban systems. Temporal relationships within city regions compel cities to work in flexible interactions. Thus, the arguments such as "job within walking distance" concept are widely to become meaningless for developed urbanizations. Informational infrastructure satellite-based communication technology is encouraging two-dimensional scattered development tendencies in near future. It makes concentrated urban space fictions, based on three-dimensional complexity, questionable. In that case, conventional arguments for mixed-use and urban diversity would also be insufficient to call for the compact cities in future. Therefore, the contemporary envisages of compact city ought to be fundamentally different than the past advocacy of compact city models and should be constructed on new bases, today. Although, the dynamics, quoted above, are mostly relevant with the developed urban world, actually such an imagination has to be regarded essential for designing urban future, at all.

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